Single Aisle
TECHNICAL TRAINING MANUAL
GENERAL FAMILIARIZATION COURSE - T4 (IAE V2500)
AIRFRAME LEVEL1

This document must be used for training purposes only

Under no circumstances should this document be used as a reference

It will not be updated.

All rights reserved
No part of this manual may be reproduced in any form,
by photostat, microfilm, retrieval system, or any other means,
without the prior written permission of AIRBUS S.A.

AIRBUS Environmental Recommendation
Please consider your environmental responsability before printing this document.

AIRFRAME LEVEL1

29 Hydraulic Power System Presentation (1) 2
32 Landing Gear Presentation (1) 14
27 Flight Controls Presentation (1) 36
51 Structure Presentation (1) 64
00 Sharklet Presentation (1) 84
52 Doors Presentation (1) 90
25 Equipment/Furnishings Presentation (1) 124
35 Oxygen Presentation (1) 176
38 Water and Waste Presentation (1) 190

UGB13131 - U2AT4M0

29 HYDRAULIC POWER SYSTEM PRESENTATION (1)

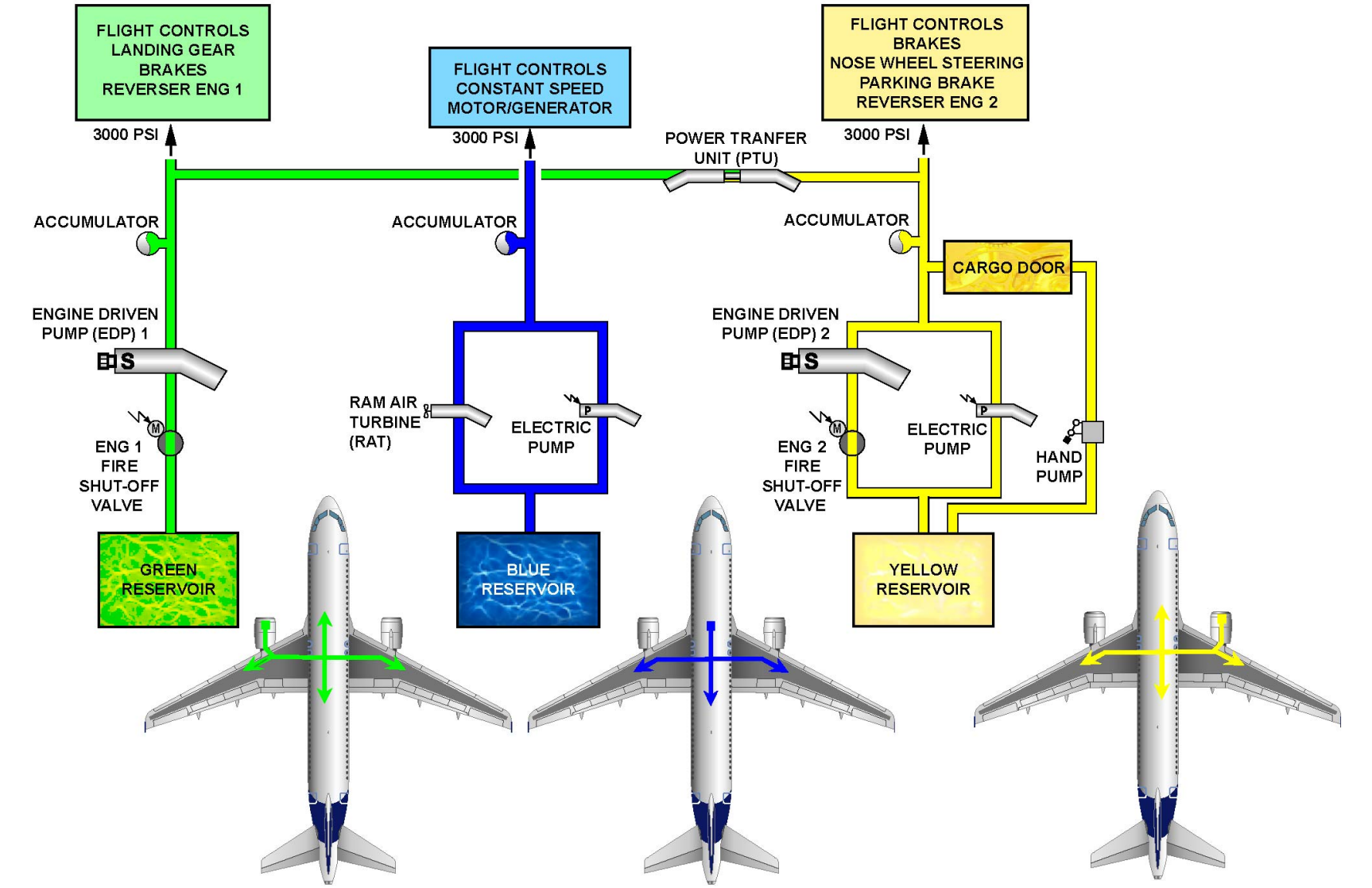
SYSTEM INTRODUCTION

The aircraft has three independent hydraulic systems:
- green,
- yellow,
- blue.

The three hydraulic systems supply hydraulic power at 3000 psi to the users:
- flight controls,
- landing gear,
- brakes,
- nose wheel steering,
- cargo doors,
- thrust reverser operation,
- Constant Speed Motor / Generator (CSM/G).

Hydraulic fluid cannot be transferred from one system to another.
A reservoir in each hydraulic system is pressurized with air to prevent cavitation.
The green and yellow hydraulic systems are each pressurized by an Engine Driven Pump (EDP) 1 and 2.
The yellow hydraulic system can also be pressurized by an electric pump.
It is mainly used on ground for maintenance and cargo door operation.
If no electric power is available, a hand pump in the yellow system can be used to operate the cargo doors.
A Power Transfer Unit (PTU) enables the green system to be pressurized by the yellow system and vice versa. It transfers the hydraulic power but does not transfer the hydraulic fluid.
Fire shut-off valves shut off Hydraulic fluid supply to the EDPs in case of fire.
They isolate the systems in case of an engine fire.
The blue hydraulic system is pressurized by an electric pump.
The electric pump is the main pump for the blue system.
It starts running at first engine start or it can be manually activated on ground for maintenance tasks.
Blue and yellow electric pumps are interchangeable.
In an emergency, the blue system can be pressurized by the Ram Air Turbine (RAT).
The RAT is deployed automatically or manually. It pressurizes the blue hydraulic system at 2500 psi. It can be retracted on ground only, following a specific maintenance procedure.

UGB13131 - U2AT4M0 - UM29PZ000000001



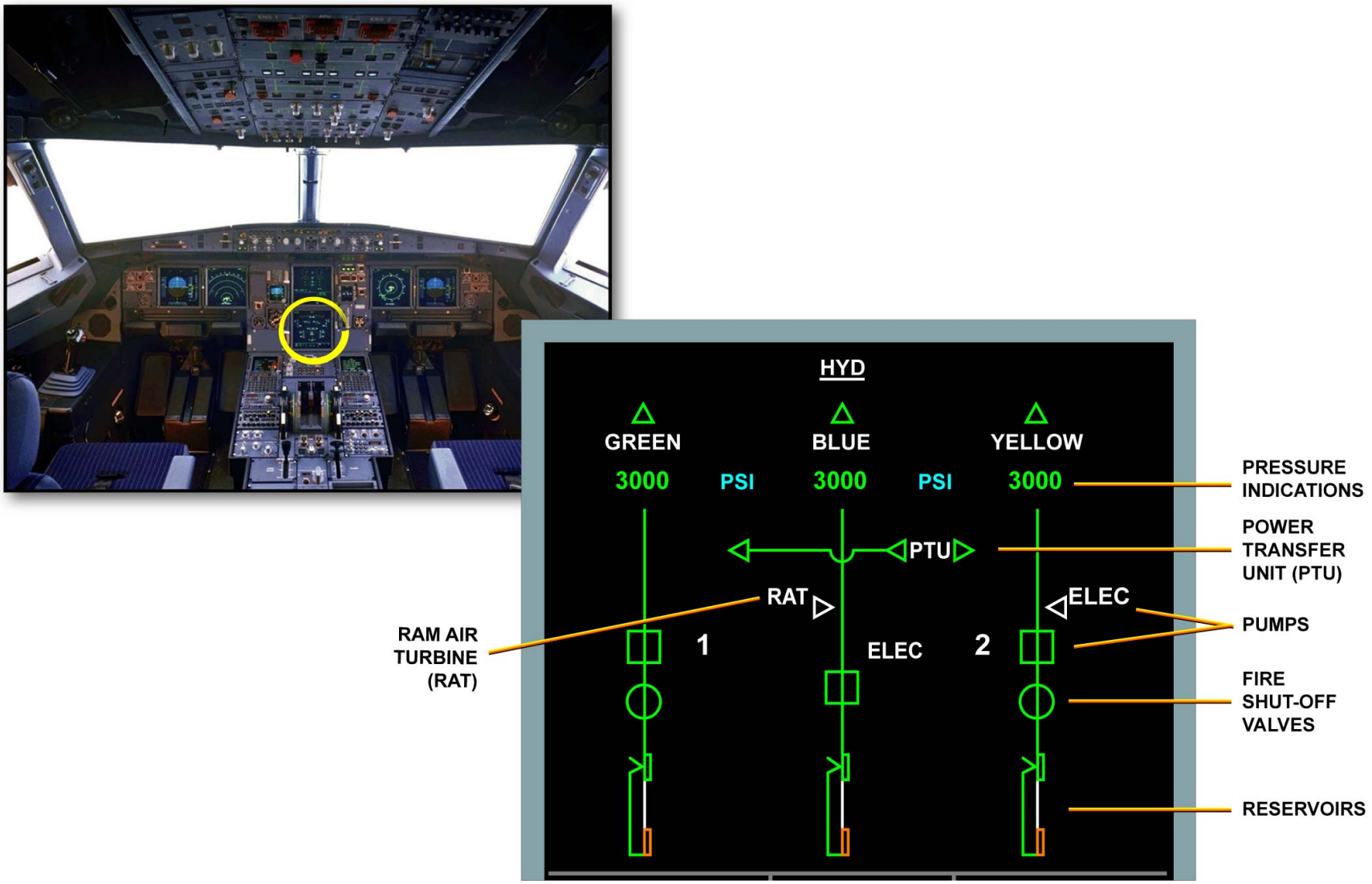
SYSTEM INTRODUCTION

29 HYDRAULIC POWER SYSTEM PRESENTATION (1)

ECAM HYDRAULIC PAGE

The items displayed on the ECAM hydraulic page are:
- reservoirs,
- fire shut-off valves,
- pumps,
- RAT,
- PTU,
- pressure indications.

UGB13131 - U2AT4M0 - UM29PZ000000001



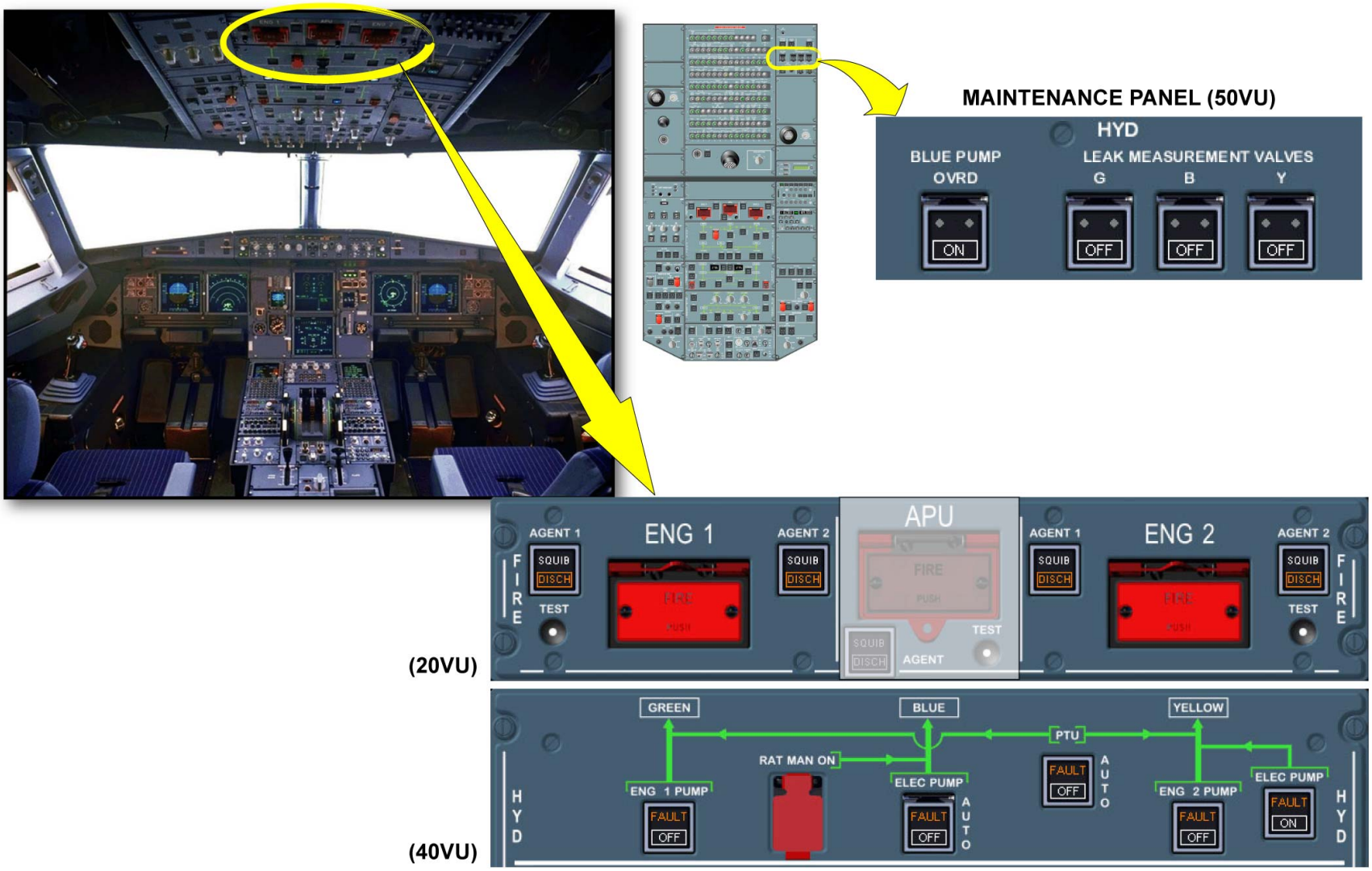
ECAM HYDRAULIC PAGE

29 HYDRAULIC POWER SYSTEM PRESENTATION (1)

CONTROL AND INDICATING

On the ENG FIRE panel (20VU), the fire shut-off valve pushbuttons ENG 1 (2) released out will close the fire shut-off valves.
The EDPs, electric pumps, PTU and the RAT are operated from the HYD control panel and monitored on the HYD ECAM page.
The blue electric pump can also be operated on ground for maintenance tasks by the BLUE PUMP OVRD pushbutton on the HYD maintenance panel.
The hydraulic leak measurement system is used for maintenance tasks only.

UGB13131 - U2AT4M0 - UM29PZ00000001



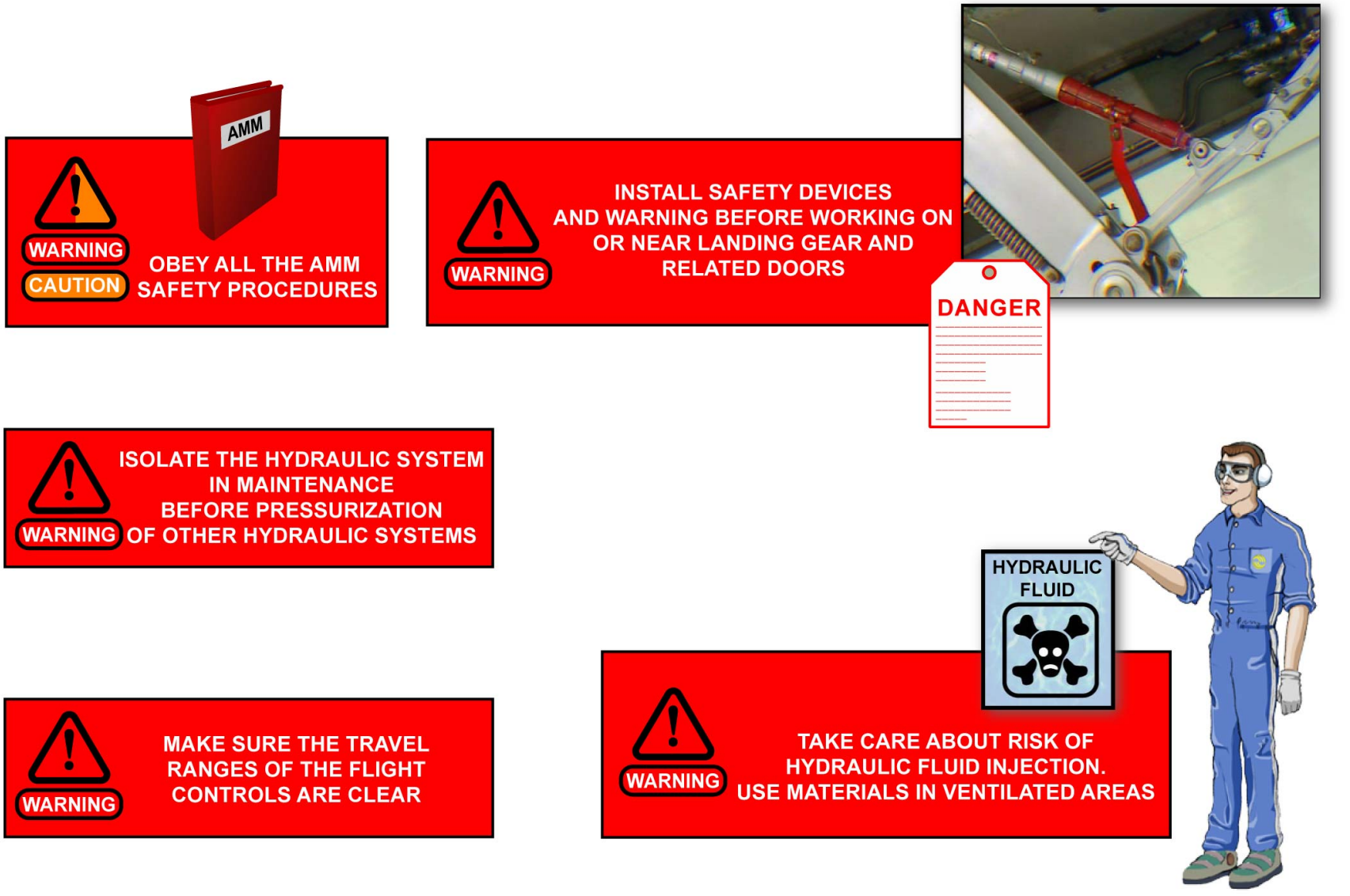
CONTROL AND INDICATING

29 HYDRAULIC POWER SYSTEM PRESENTATION (1)

SAFETY PRECAUTIONS

When you work on the aircraft, make sure that you obey all the AMM safety procedures. This will prevent injury to persons and/or damage to the aircraft. Here is an overview of main safety precautions relative to the Hydraulic Power System.
Make sure that the hydraulic system you work on is isolated before you pressurize the other hydraulic systems.
Make sure that the travel ranges of the flight controls are clear. Movement of the flight controls can cause injury to persons and/or damage to the aircraft.
Do not get hydraulic fluid or hot gas from hydraulic reservoir on your body. Use protective clothing to prevent risk of poisoning and burns. Use solvents, cleaning agents, sealants and other special materials in a ventilated area. To prevent inadvertent breathing or contact with your body, use applicable gloves, eye protections and face mask.
Install safety devices and warning before working on or near landing gear and related doors.

UGB13131 - U2AT4M0 - UM29PZ00000001


AMM
WARNING
CAUTION
OBEY ALL THE AMM SAFETY PROCEDURES
WARNING
INSTALL SAFETY DEVICES AND WARNING BEFORE WORKING ON OR NEAR LANDING GEAR AND RELATED DOORS
DANGER
WARNING
ISOLATE THE HYDRAULIC SYSTEM IN MAINTENANCE BEFORE PRESSURIZATION OF OTHER HYDRAULIC SYSTEMS
WARNING
MAKE SURE THE TRAVEL RANGES OF THE FLIGHT CONTROLS ARE CLEAR
HYDRAULIC FLUID
WARNING
TAKE CARE ABOUT RISK OF HYDRAULIC FLUID INJECTION.
USE MATERIALS IN VENTILATED AREAS

SAFETY PRECAUTIONS

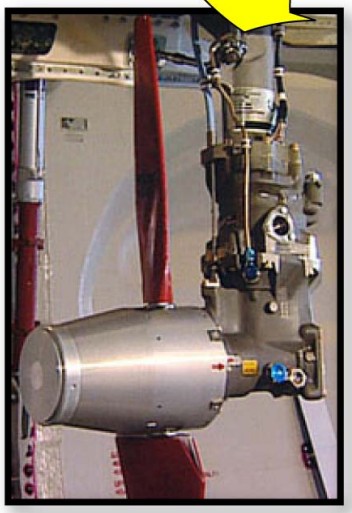
29 HYDRAULIC POWER SYSTEM PRESENTATION (1)

SAFETY PRECAUTIONS (continued)

RAT

Activation of the RAT MAN ON switch on the ground or in flight will extend the RAT. Install the safety device when you work near the RAT.

UGB13131 - U2AT4M0 - UM29PZ00000001



WARNING

ACTIVATION OF THE RAT MAN ON SWITCH ON THE GROUND OR IN FLIGHT WILL EXTEND THE RAM AIR TURBINE (RAT)

HYDRAULIC PANEL (40VU)

WARNING

INSTALL THE SAFETY DEVICE WHEN YOU WORK NEAR THE RAT

SAFETY PRECAUTIONS - RAT

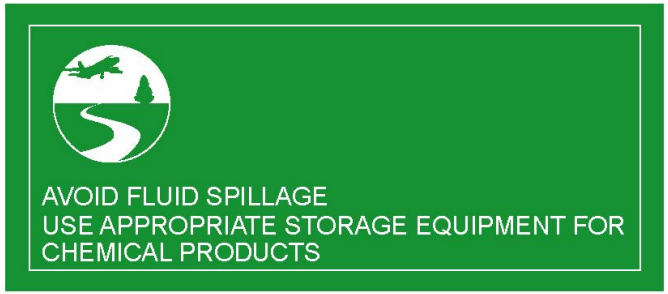
29 HYDRAULIC POWER SYSTEM PRESENTATION (1)

ENVIRONMENTAL PRECAUTIONS

Do not discharge products such as oil, fuel, solvent, lubricant either in trash bins, soil or into the water network (drains, gutters, rain water, waste water, etc...).
Sort waste fluids and use specific waste disposal containers.
Each product must be stored in an appropriate and specific cabinet or room such as a fire-resistant and sealed cupboard.

STORE PRODUCTS IN APPROPRIATE CONTAINER/CUPBOARD/ROOM

SORT WASTE FLUIDS IN CONTAINERS



FLUID SPILL CLEANUP KIT

USE SPECIFIC WASTE DISPOSAL CONTAINERS

ENVIRONMENTAL PRECAUTIONS

32 LANDING GEAR PRESENTATION (1)

LANDING GEAR

The A320 aircraft family has a LH and RH dual wheel Main Landing Gear (MLG) and a dual wheel Nose Landing Gear (NLG).
The MLG retracts inboard into the MLG wheel well and the NLG retracts forward into the NLG wheel well. The Landing Gears (L/Gs) are hydraulically operated and electrically controlled. Each L/G has hydraulically and mechanically operated doors. Each L/G has a shock absorber.

Main Landing Gear (MLG)

Nose Landing Gear (NLG)

LANDING GEAR

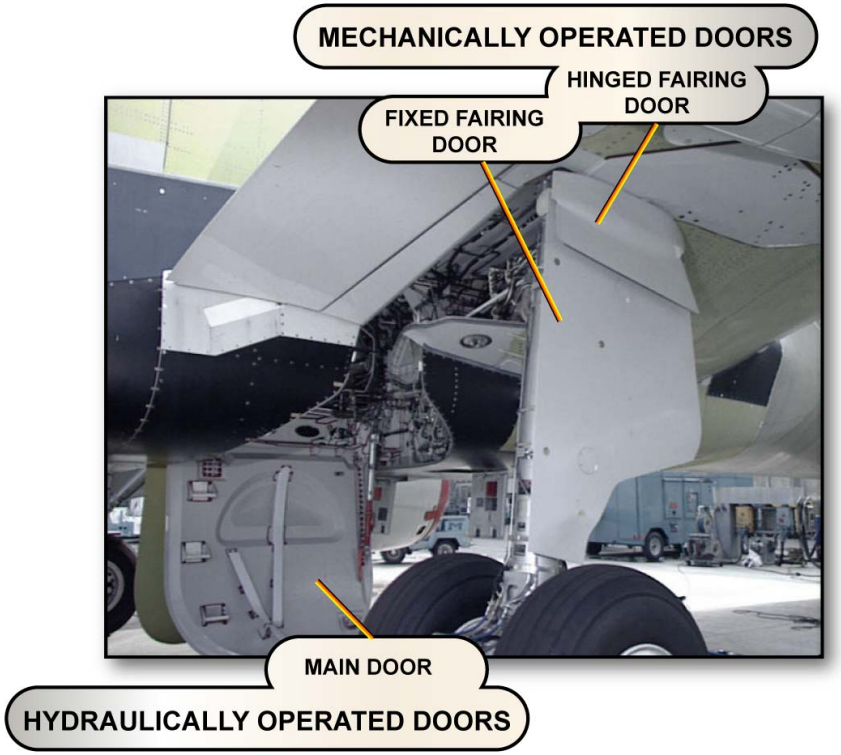
32 LANDING GEAR PRESENTATION (1)

LANDING GEAR (continued)

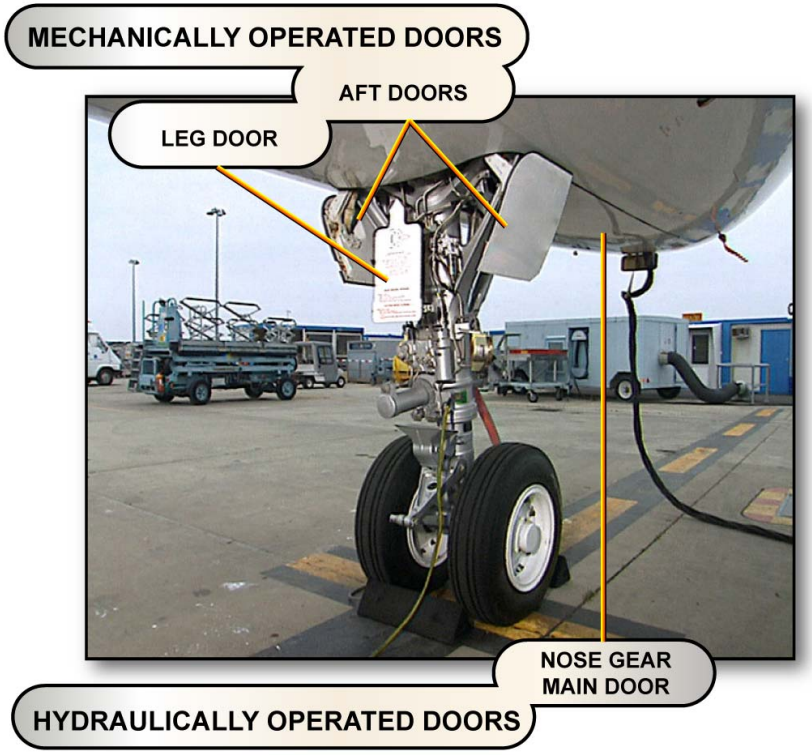
LANDING GEAR DOORS

Doors are hydraulically operated and electrically controlled.
The mechanically operated doors are linked to the L/G struts and move with the gear.

UGB13131 - U2AT4M0 - UM32PZ00000002



Main Landing Gear (MLG)



Nose Landing Gear (NLG)

32 LANDING GEAR PRESENTATION (1)

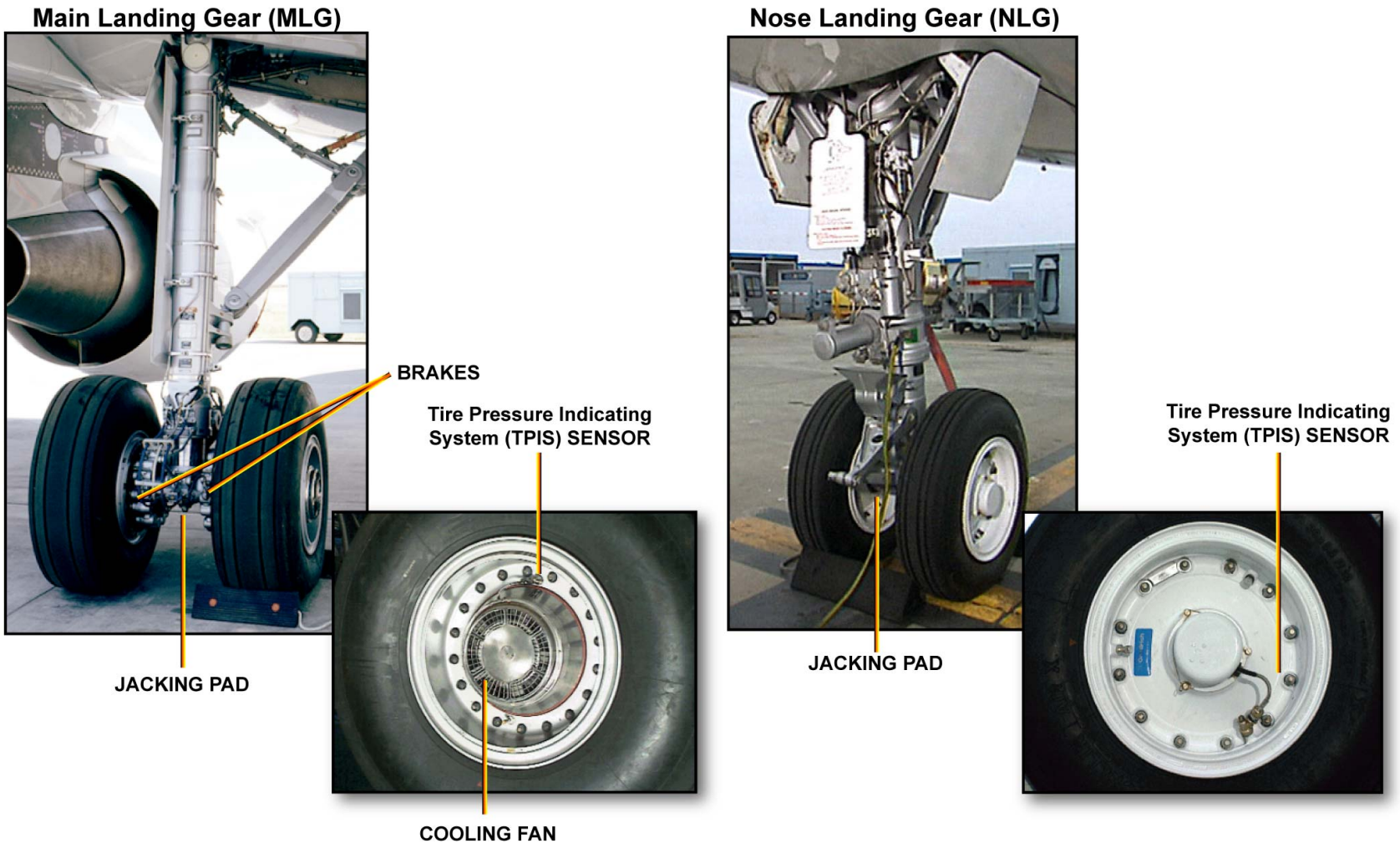
LANDING GEAR (continued)

WHEELS AND BRAKES

The MLG has:
- Wheels,
- Carbon brakes,
- Brake fans (optional),
- Tire Pressure Indicating System (TPIS) sensor (optional),
- Gear jacking pad for wheel change.

The NLG has:
- A Nose Wheel Steering (N/WS) system,
- A jacking pad for wheel change,
- A TPIS sensor (optional).

UGB13131 - U2AT4M0 - UM32PZ00000002



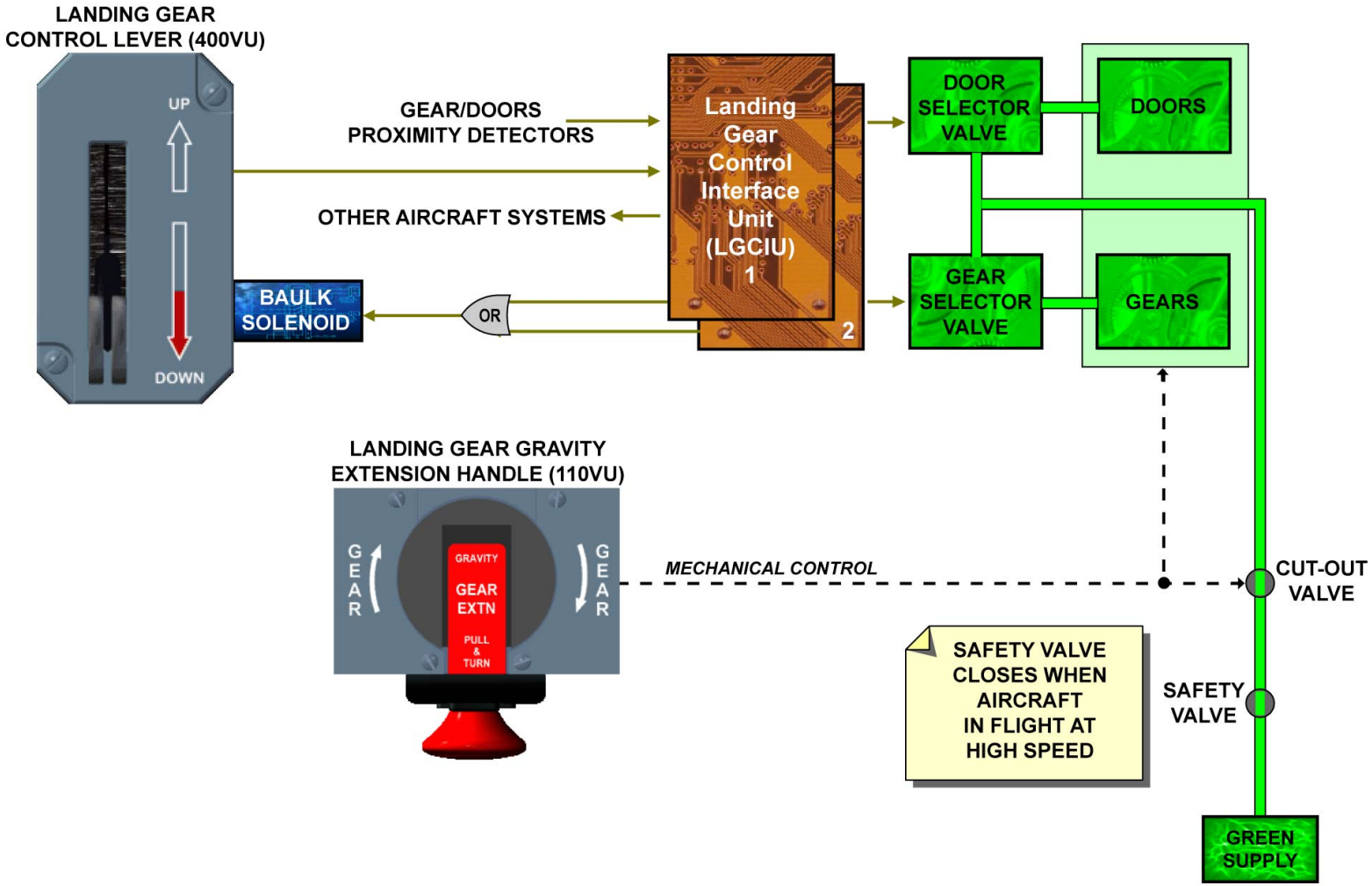
LANDING GEAR - WHEELS AND BRAKES

32 LANDING GEAR PRESENTATION (1)

LANDING GEAR EXTENSION AND RETRACTION

The L/G extension and retraction is controlled from the L/G control lever installed in the cockpit.
Two computers called Landing Gear Control and Interface Unit (LGCIU) 1 and 2 control the gear up and down sequence. Only one LGCIU is in command while the other LGCIU is in standby. With any up selection the LGCIU in command will change and control a complete gear cycle.
The gear in the up and down position, the door in the close and open position and the shock absorber compressed (ground signal) and in the fully extended (flight signal) position are monitored by proximity detectors.
In case of failure of a LGCIU or a proximity detector, the other LGCIU will be in command.
An interlock mechanism prevents unsafe retraction from locking the control lever in the down position when any shock absorber is compressed (ground signal).
The Nose Wheel (N/W) is automatically centered when the shock absorber is fully extended (flight signal).
The green hydraulic system powers the L/G. At high air speed a safety valve cuts hydraulic supply to the L/G system.
In case of failure, the gear can be extended mechanically from the cockpit by means of a free fall extension handle. During free fall extension, a cut-out valve will close to cut the L/G hydraulic supply.

UGB13131 - U2AT4M0 - UM32PZ00000002



LANDING GEAR EXTENSION AND RETRACTION

32 LANDING GEAR PRESENTATION (1)

BRAKING

There are two braking modes:
- Normal braking,
- Alternate braking.

The green hydraulic system powers the normal braking system.
The yellow hydraulic system powers the alternate brake system and a brake accumulator backs up the yellow hydraulic system.
The Braking/Steering Control Unit (BSCU) controls and monitors normal braking functions.
These functions are:
- Braking pressure regulation and anti skid,
- Automatic braking,
- Nose wheel steering control,
- Brake temperatures indication.

The Alternate Braking Control Unit (ABCU) controls and monitors the alternate braking system with or without the anti-skid protection.

NORMAL BRAKING

In manual normal braking, electrical braking orders are sent by the brake pedals to the BSCU. The BSCU energizes the normal brake selector valve and green pressure is supplied to the brakes through normal servo valves.
To obey the manual braking orders and A/SKID regulation, the BSCU regulates the pressure supplied to each brake through the normal servo valves.
Wheel rotating speed from the tachometer and braking pressure are supplied to the BSCU for braking and A/SKID computation.
Before landing, the crew can select one of the auto brake modes MEDium or LOw, to get the best deceleration rate that agrees with the length of the runway.
Before take-off, MAXimum mode must be selected in case of an aborted take-off.
Braking starts when the ground spoilers deploy.
To obey the selected deceleration rate and the A/SKID regulation, the BSCU regulates the pressure supplied to each brake through the normal servo valves.
When the aircraft deceleration agrees with a given value, the DECELerate green light on the L/G panel comes on.
To stop the MLG wheels rotation before entry into the L/G bay, a programmed brake pressure is sent to the normal brakes during gear retraction.
Optionally, the N/Ws are mechanically braked at the end of the gear retraction with brake bands.
When there is no braking order, the servo valve is fully closed.

ALTERNATE BRAKING

The yellow hydraulic system energizes the alternate brake system and a brake accumulator is used as a back-up to this yellow hydraulic system.
The Alternate Braking Control Unit (ABCU) electrically controls the alternate braking with A/SKID or without A/SKID.
The ABCU becomes active when the normal brake system is defective and/or the green system has a low hydraulic pressure.
The data comes from the BSCU. The brake pedals give braking inputs, which are transmitted through the Alternate Brake Pedal Transmitter Unit to the ABCU. The ABCU will control the braking pressure.
The braking, wheel speed and aircraft speed data are sent to the BSCU to calculate the A/SKID protection.
The braking pressure is read on the triple indicator.

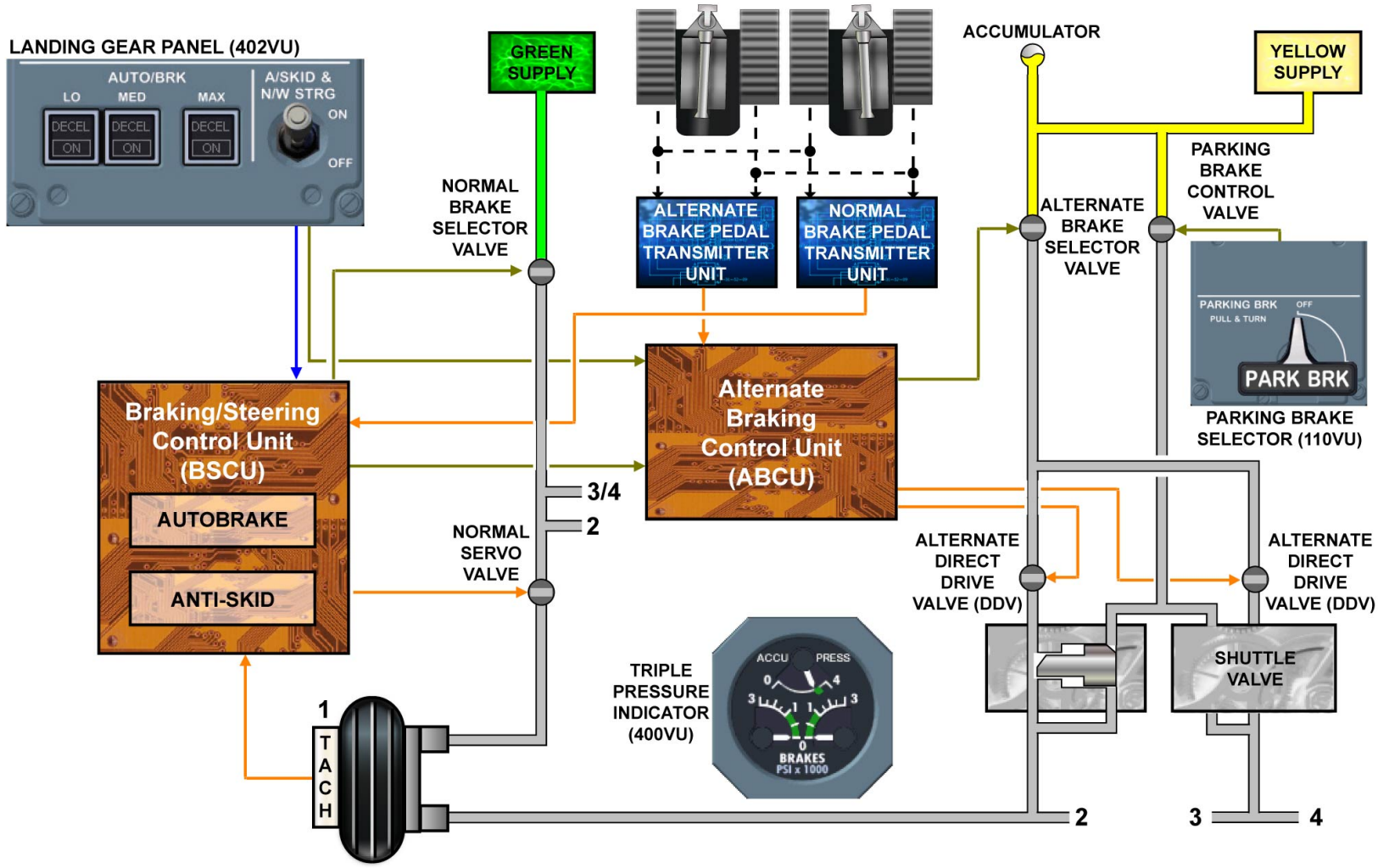
ANTI SKID FUNCTION

The A/SKID function is a part of BSCU and can be set to OFF with the A/SKID & N/W STeeRinG switch.
BSCU computes the anti skid orders during normal braking. During alternate braking, BSCU computes anti skid orders and sends to ABCU for execution.

If there is a BSCU failure or low pressure in the green and yellow hydraulic systems, the anti skid function is lost.
The pilot must then refer to the triple pressure indicator to control the brake pressure and to prevent wheel locking.
But the ABCU sets a maximum limit of 1000 PSI for the brake pressure.
If there is a loss of the green and yellow hydraulic systems, braking is still available with the brake accumulator.
With the accumulator pressure only, a maximum of 7 full brake pedal applications can be done.

PARKING BRAKE

The yellow hydraulic pressure or the brake accumulator supplies the parking brake system through the shuttle valve.
Putting ON the parking brake deactivates the other braking modes and the A/SKID system. With the parking brake handle in the ON position, the parking brake control valve opens and the yellow pressure goes through the parking brake control valve, the shuttle valves and gets to the brake pistons of the alternate braking system. The BSCU and ABCU will deactivate the other braking modes.
The pressure delivered to the LH and RH brakes as well as the brake accumulator pressure are indicated on the triple pressure indicator.



BRAKING - NORMAL BRAKING ... PARKING BRAKE

This Page Intentionally Left Blank

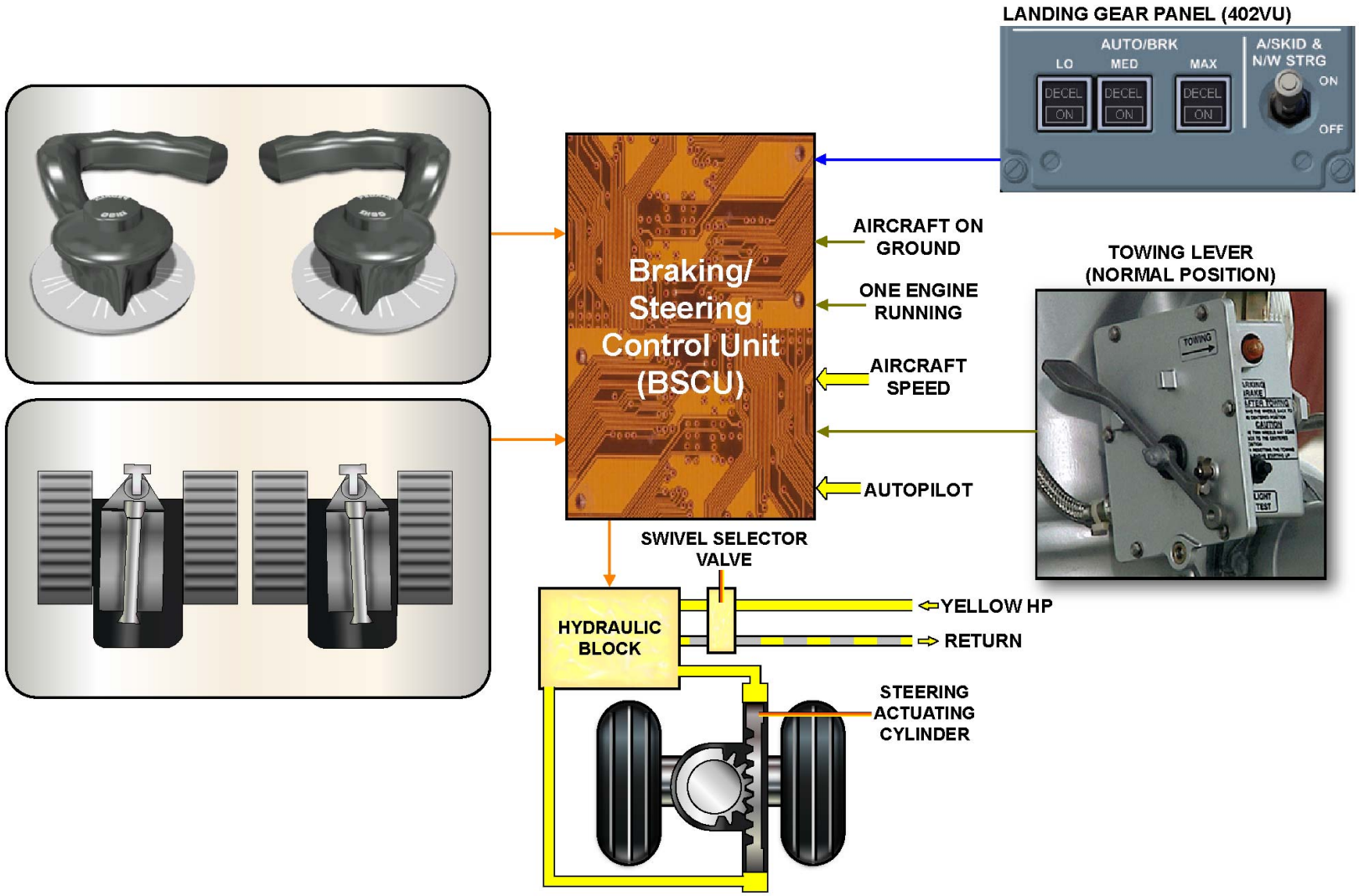
32 LANDING GEAR PRESENTATION (1)

STEERING

The steering system uses the yellow hydraulic system to operate a steering actuating cylinder, which changes the direction of the NLG wheels.
Orders from the steering hand wheels, the rudder pedals and the autopilot are added algebraically.
The BSCU transforms the orders into N/WS angle. That angle has the following limits:
- Rudder pedals and autopilot: max 6 degrees,
- Hand wheels: max 74 degrees.

The steering system receives hydraulic pressure in the following conditions:
- A/SKID & N/W STeeRinG switch in ON,
- Towing control lever in normal position,
- At least one ENG MASTER switch ON,
- Aircraft is on ground.

UGB13131 - U2AT4M0 - UM32PZ00000002


LANDING GEAR PANEL (402VU)
AUTO/BRK
LO
MED
MAX
DECEL
ON
A/SKID &
N/W STRG
ON
OFF
Braking/
Steering
Control Unit
(BSCU)
AIRCRAFT ON
GROUND
ONE ENGINE
RUNNING
AIRCRAFT
SPEED
AUTOPILOT
TOWING LEVER
(NORMAL POSITION)
TOWING
SWIVEL SELECTOR
VALVE
HYDRAULIC
BLOCK
YELLOW HP
RETURN
STEERING
ACTUATING
CYLINDER

STEERING

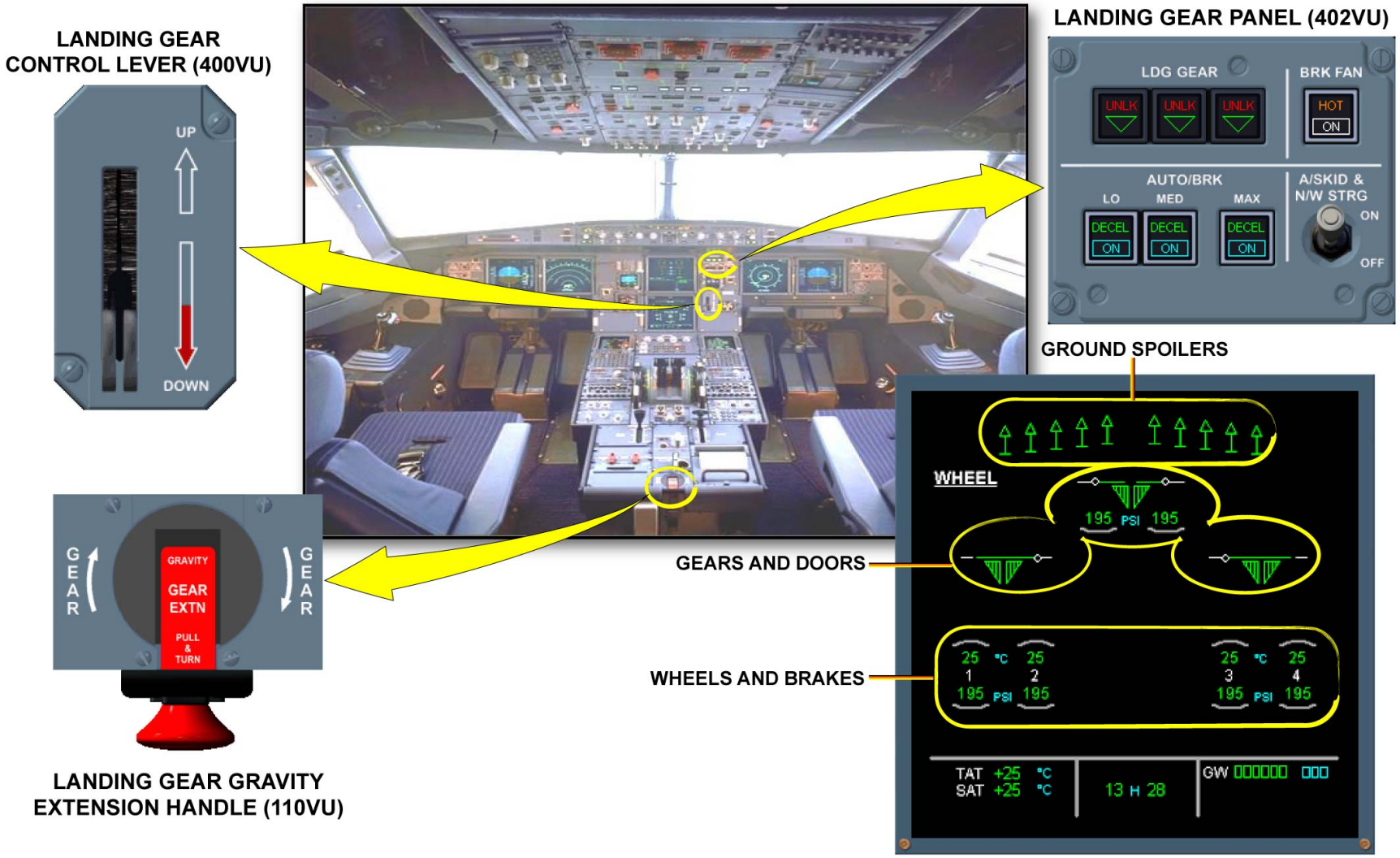
32 LANDING GEAR PRESENTATION (1)

CONTROL AND INDICATING

This section will highlight the control panels and indications for the landing gear system.

LANDING GEAR / BRAKES CONTROL AND INDICATING

The cockpit equipment related to the landing gear control and indicating are :
- L/G control lever,
- L/G gravity extension lever,
- L/G panel, which includes:
- L/G position indication panel,
- Auto brake mode selection panel,
- Brake fan indication/selection panel,
- A/SKID & N/W STeeRinG selector.
- ECAM WHEEL page.



CONTROL AND INDICATING - LANDING GEAR / BRAKES CONTROL AND INDICATING

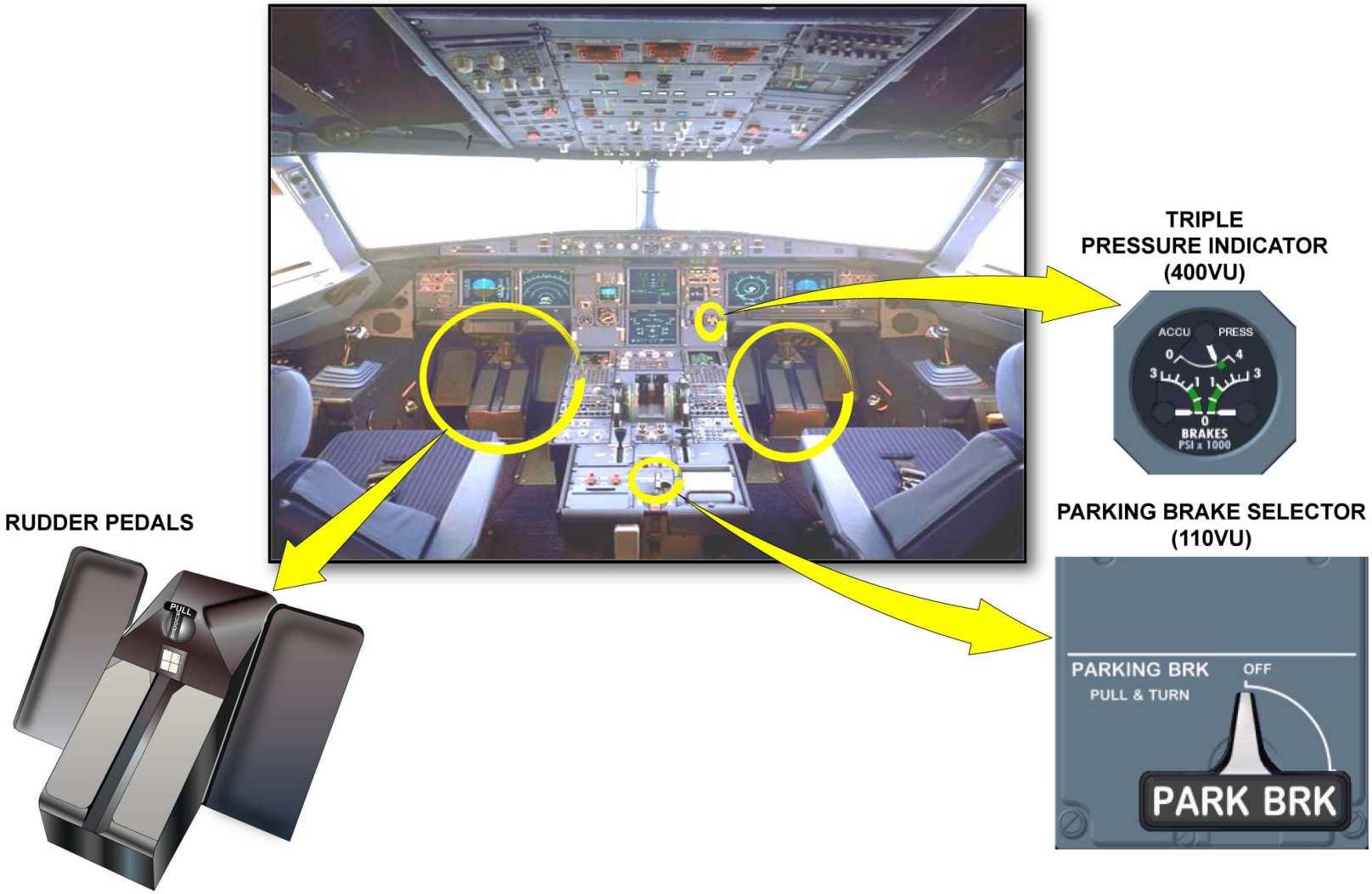
32 LANDING GEAR PRESENTATION (1)

CONTROL AND INDICATING (continued)

INDICATOR, PARKING BRAKE HANDLE, RUDDER PEDALS

The Cockpit equipment related to the landing gear brakes are:
- Triple pressure indicator for brake accumulator pressure and alternate/parking brake pressure,
- Parking brake selector,
- Rudder/brake pedals.

UGB13131 - U2AT4M0 - UM32PZ00000002



CONTROL AND INDICATING - INDICATOR, PARKING BRAKE HANDLE, RUDDER PEDALS

32 LANDING GEAR PRESENTATION (1)

CONTROL AND INDICATING (continued)

NOSE WHEEL STEERING

N/WS controls are done with:
- Rudder/steering pedals,
- N/WS hand wheels.

UGB13131 - U2AT4M0 - UM32PZ00000002

CONTROL AND INDICATING - NOSE WHEEL STEERING

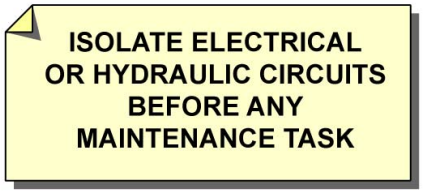
32 LANDING GEAR PRESENTATION (1)

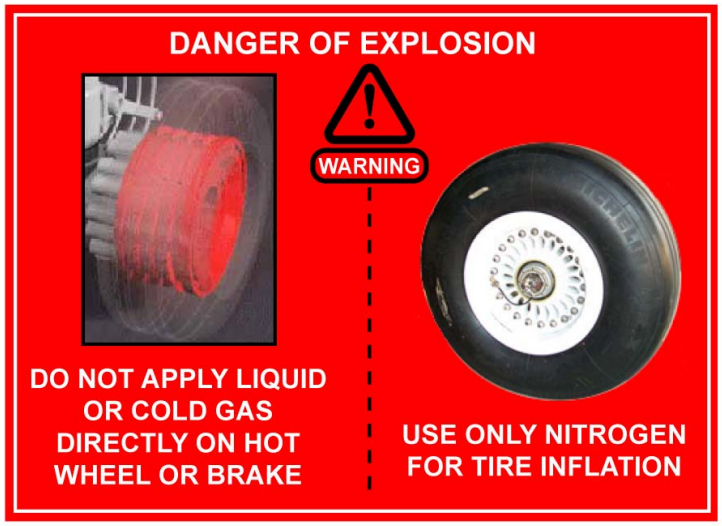
SAFETY PRECAUTIONS

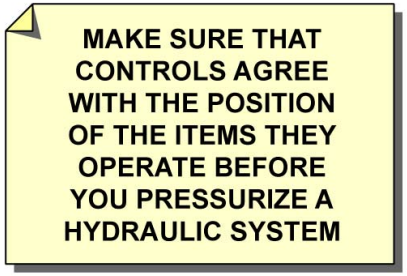
When you work on the L/G system, make sure that you obey all the AMM safety procedures. This will prevent injury to persons and/or damage to the aircraft. Here is an overview of main safety precautions relative to the L/G system.
When you do any maintenance task, make sure that all circuits are isolated. Unwanted electrical or hydraulic power can be dangerous.
Make sure that the L/G ground safety locks are installed.
Let the brakes and the wheels become cool before you go near the L/G.
Do not apply a liquid or gas fire extinguisher directly on a hot wheel or brake unit. This could cause an explosion.
Use only nitrogen for tire inflation. If the brakes overheat, other gases can cause an explosion.
During L/G servicing, do not let high-pressure gas get in contact with your skin. Gas bubbles in your blood can kill you.
Make sure that the controls agree with the position of the items they operate before you pressurize a hydraulic system.

UGB13131 - U2AT4M0 - UM32PZ00000002

LANDING GEAR SYSTEM




DANGER OF EXPLOSION
WARNING
DO NOT APPLY LIQUID OR COLD GAS DIRECTLY ON HOT WHEEL OR BRAKE
USE ONLY NITROGEN FOR TIRE INFLATION



SAFETY PRECAUTIONS

27 FLIGHT CONTROLS PRESENTATION (1)

INTRODUCTION

All flight control surfaces are made of composite materials except for the slats which are made of aluminum alloy.
All flight control surfaces are electrically controlled and hydraulically operated.
As a back-up, the stabilizer and rudder is mechanically controlled and hydraulically operated.
Pilots use side sticks to fly the aircraft in pitch and roll.

FLIGHT CONTROL SURFACES

The control is achieved through the following conventional surfaces.

PITCH

Pitch control is achieved by two elevators and the Trimmable Horizontal Stabilizer (THS).
Elevators are used for short-term activity.
The THS is used for long-term activity.

ROLL

Roll control is achieved by one aileron and spoilers 2 to 5 on each wing, numbered from wing root to wing tip.

YAW

Yaw control is fulfilled by the rudder.
The rudder is used during cross wind take-off and landing, and in case of engine failure (thrust asymmetry).
The yaw damper function controls the rudder for Dutch roll damping and turn coordination.

SPEED BRAKES

The speed brake function is used in flight to increase the aircraft drag.
Spoilers 2 to 4 are used.

Roll orders and speed brake orders are added with priority given to the roll function.

GROUND SPOILERS

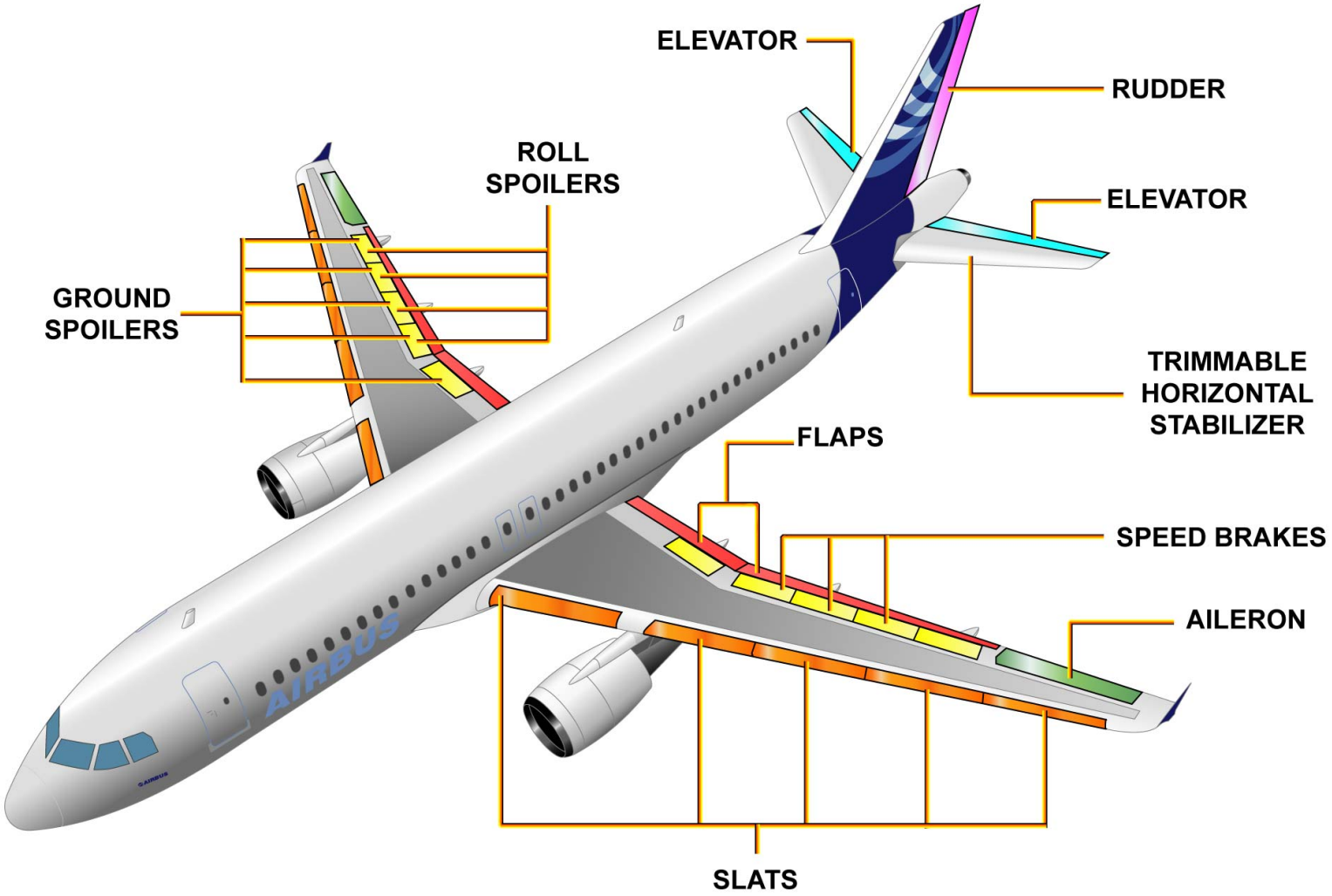
The ground spoiler function is used to destroy the lift during landing and in case of aborted take-off. All spoiler panels are used.

HIGH LIFT

The high lift function is achieved by slats and flaps.
There are two flaps, inboard and outboard, and five slats on each wing, numbered from wing root to wing tip.
The A321 is equipped with double slotted flaps.

AILERON DROOP

The aileron droop function increases the lift on the part of the wing which is not equipped which flaps.
The ailerons are deflected downwards when the flaps are extended.



INTRODUCTION & FLIGHT CONTROL SURFACES

27 FLIGHT CONTROLS PRESENTATION (1)

CONTROLS

All the flight controls are operated from the cockpit.

SIDE STICK

The two side sticks are used for manual pitch and roll control.
They are spring loaded to neutral position.
Each side stick has a push button used for autopilot disconnection and to take priority over the other side stick.

SPEED BRAKE LEVER

The speed brake lever controls the position of the speed brake surfaces and pre selection of the ground spoiler function.
For the speed brake function, the lever has to be pushed down and placed in the required position.
To arm the ground spoilers for automatic extension, the lever must be pulled UP when in the retracted position.

THS CONTROL

The THS is automatically trimmed during flight.
After touch down, the THS is automatically trimmed to neutral position.
The THS mechanical control is used to set the pitch trim before take-off or when the automatic pitch trim is not available.
Trim position is indicated in degrees on a scale adjacent to each trim wheel.

RUDDER PEDALS

Two sets of pedals enable the rudder mechanical control.
The pedals can be individually adjusted.

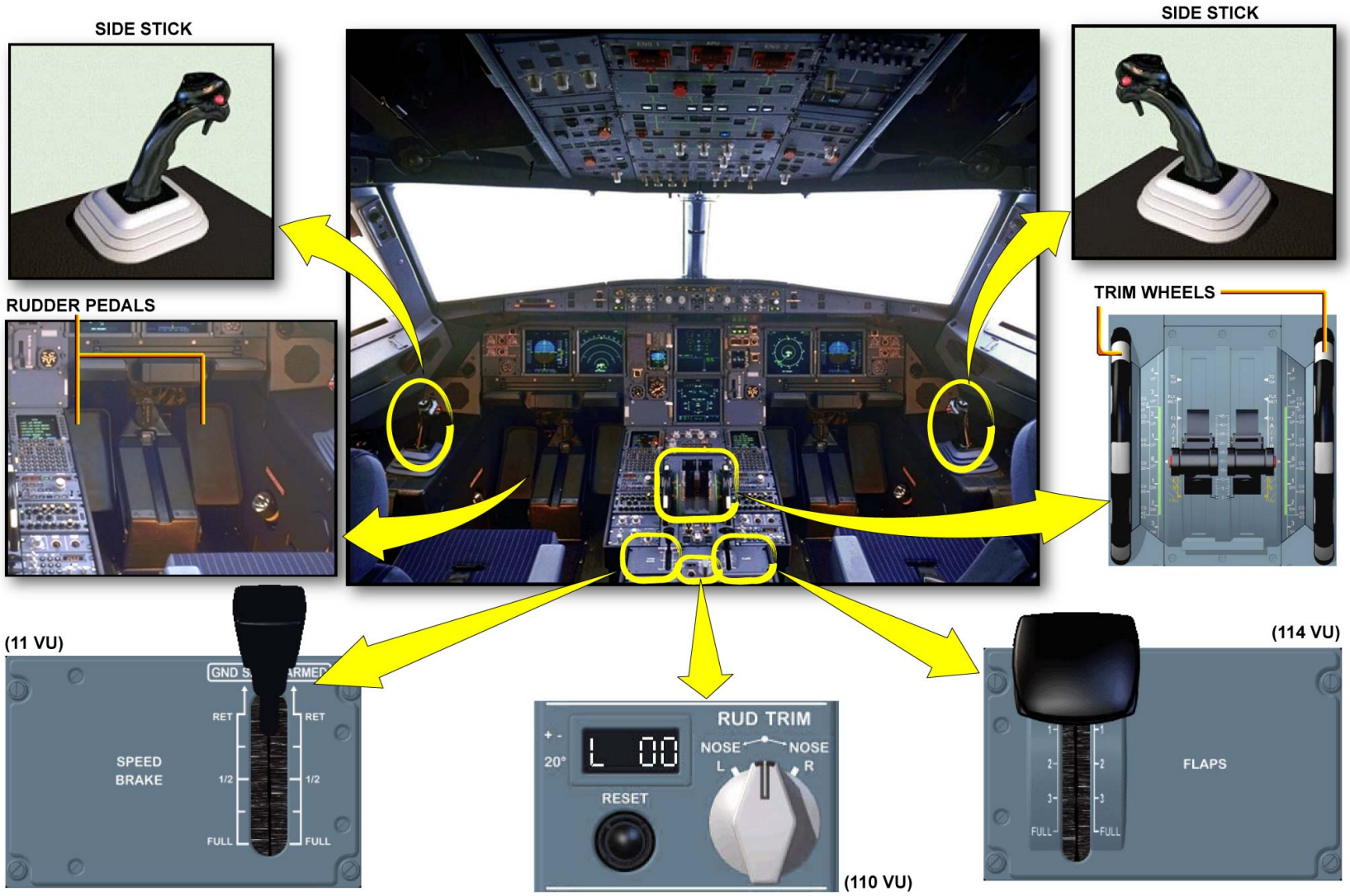
RUDDER TRIM

The rudder trim control switch operates the electrical trim actuator to move the rudder to a new neutral position.
The rudder trim RESET switch resets the trim position to zero.
The rudder trim indicator displays rudder trim position in degrees.

FLAP CONTROL LEVER

The flap control lever selects simultaneous operation of slat and flap.
It has five positions.

UGB13131 - U2AT4M0 - UM27PZ00000002



CONTROLS - SIDE STICK ... FLAP CONTROL LEVER

27 FLIGHT CONTROLS PRESENTATION (1)

INDICATING

Several indications are used for the flight controls operation.

FLIGHT CONTROL PANELS

The computer push buttons are used to energize, de-energize and reset the flight control computers.
FAULT or OFF can be indicated.

SIDE STICK PRIORITY LIGHTS

The side stick priority lights in front of each pilot, indicate who has taken and who has lost priority.

ECAM PAGES

The flight control system uses three ECAM pages:
- Flight control ECAM page for primary surface indication,
- WHEEL ECAM page for ground spoiler indication,
- Engine/Warning Display for slat/flap indication.

UGB13131 - U2AT4M0 - UM27PZ00000002

INDICATING - FLIGHT CONTROL PANELS ... ECAM PAGES

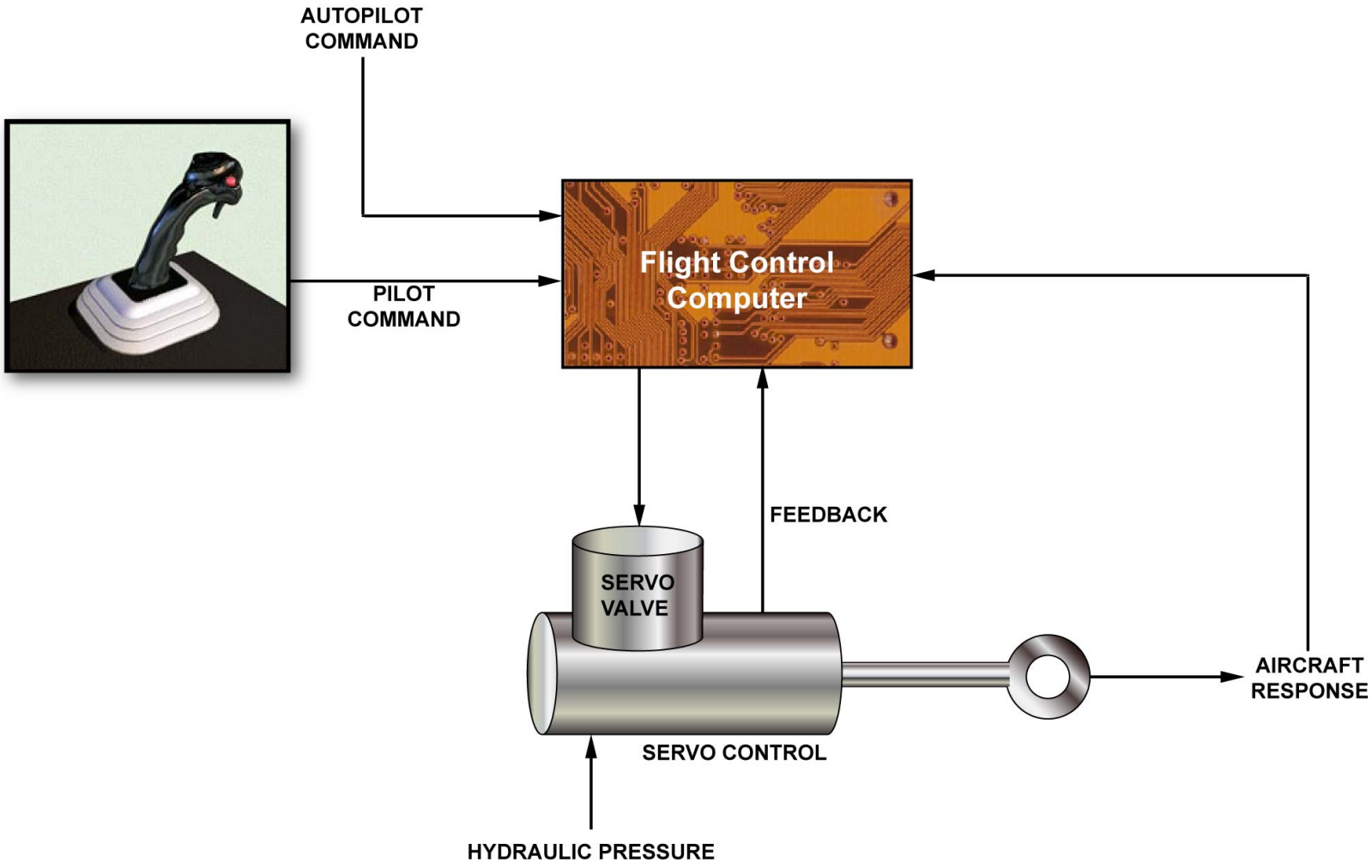
27 FLIGHT CONTROLS PRESENTATION (1)

FLY BY WIRE PRINCIPLE

The pilots use the side sticks to fly the aircraft in pitch and roll (and in yaw indirectly through turn coordination). The pilot's side stick orders are sent to the flight control computers. These computers convert the orders into an aircraft objective. The computers send surface deflection orders to the surfaces in order to achieve the aircraft objective. Then, the computers monitor the position feedback of the surfaces. This loop is called "inner loop". The computers also receive an aircraft response and compare it to the demand (coming from the orders), this loop is called an "outer loop". The fly by wire design requires the aircraft to be servo-looped.
However, regardless of the pilot's inputs, the computer prevents:
- excessive maneuvers,
- flight outside the safe flight envelope.

Autopilot commands are given directly to the computers.

UGB13131 - U2AT4M0 - UM27PZ00000002



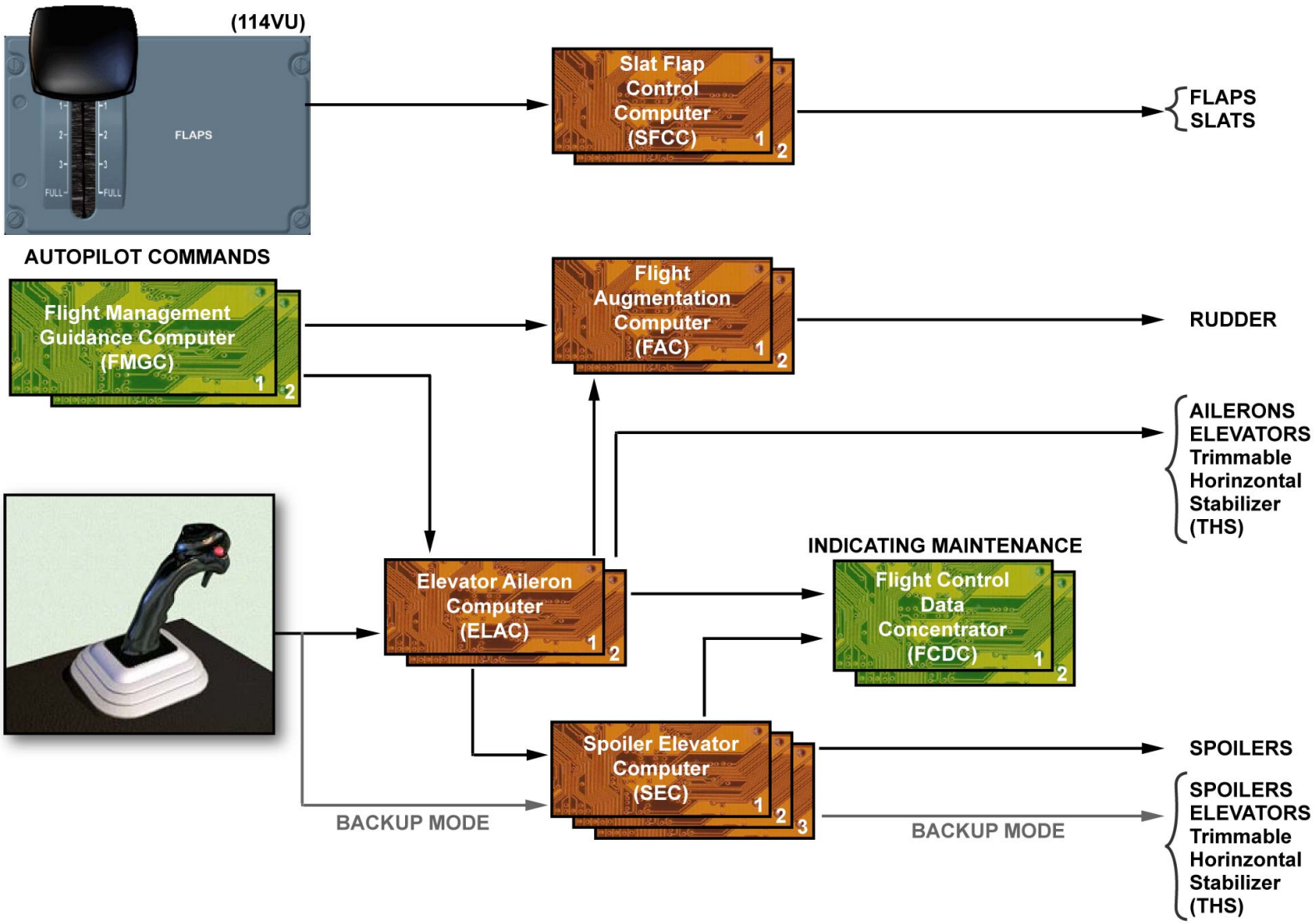
FLY BY WIRE PRINCIPLE

27 FLIGHT CONTROLS PRESENTATION (1)

FLIGHT CONTROLS ARCHITECTURE

A computer arrangement permanently controls and monitors the flight control surfaces, it also records and stores faults.
This arrangement includes:
- 2 Elevator Aileron Computers (ELAC) for pitch and roll control,
- 3 Spoiler Elevator Computers (SEC) for pitch and roll control,
- 2 Flight Augmentation Computers (FAC) for yaw control,
- 2 Flight Control Data Concentrators (FCDC) for indication and maintenance tests,
- 2 Flight Management Guidance Computer (FMGC) for autopilot commands,
- 2 Slat Flap Control Computers (SFCC) for slat and flap control.

UGB13131 - U2AT4M0 - UM27PZ00000002



FLIGHT CONTROLS ARCHITECTURE

27 FLIGHT CONTROLS PRESENTATION (1)

SURFACES

All the flight control surfaces are hydraulically operated by actuators which receive electrical signals from the computers. The rudder and the Trimmable Horizontal Stabilizer (THS) can also be mechanically controlled.

ACTUATORS

All the actuators are hydraulically powered by one of the three hydraulic circuits, except the rudder trim actuator, the rudder travel limitation actuator and the THS servo-motors which are electrically driven.

COMPUTERS

The relationship between actuators and computers is indicated on the schematic. The left or right elevator actuators are connected to two computers, one ELevator Aileron Computer (ELAC) and one Spoiler Elevator Computer (SEC).

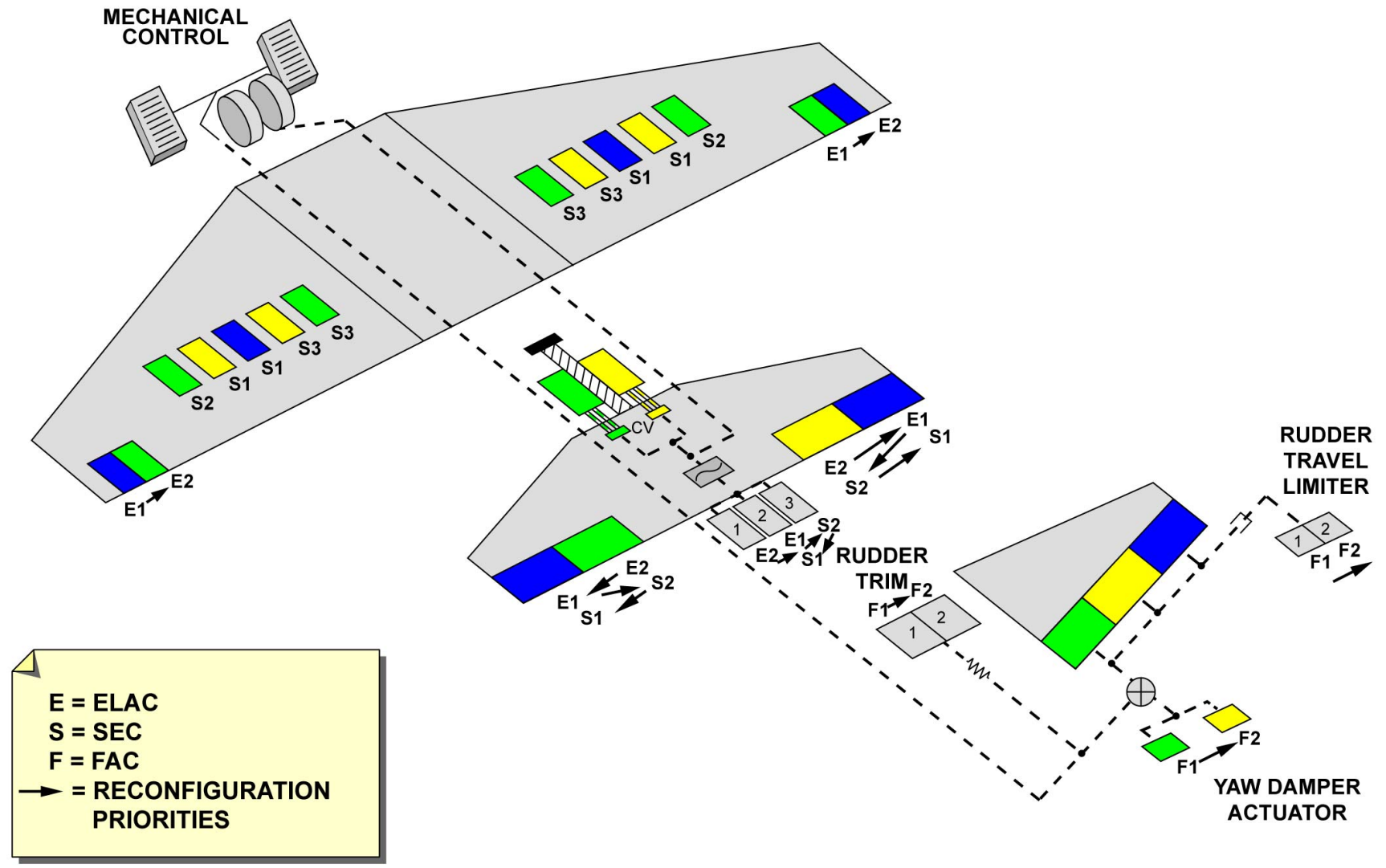
ACTIVE SERVO CONTROLS

There are two servo controls for each aileron, for each elevator and for the yaw damping function. In normal configuration, one servo control actuates the surface. It is called active servo control. The second, which follows the surface deflection, is in damping mode. When only the mechanical control of the pitch trim is available (all computers inop), the centering mode is applied to the elevators. The actuators are hydraulically maintained in neutral position.

RECONFIGURATION PRIORITIES

In normal configuration, the following computers ensure the servoloop control. The arrows indicate the actuation reconfiguration priorities in case of computer failure or loss of hydraulic circuits.

UGB13131 - U2AT4M0 - UM27PZ00000002



SURFACES - ACTUATORS ... RECONFIGURATION PRIORITIES

27 FLIGHT CONTROLS PRESENTATION (1)

FLIGHT CONTROL LAWS

The Electrical Flight Control System (EFCS) computers convert pilot inputs into aircraft control objectives.
The computers calculate the control laws that are used to compute the surface deflections.
The system has a high degree of redundancy and it will reconfigure itself when failures occur.

NORMAL LAW

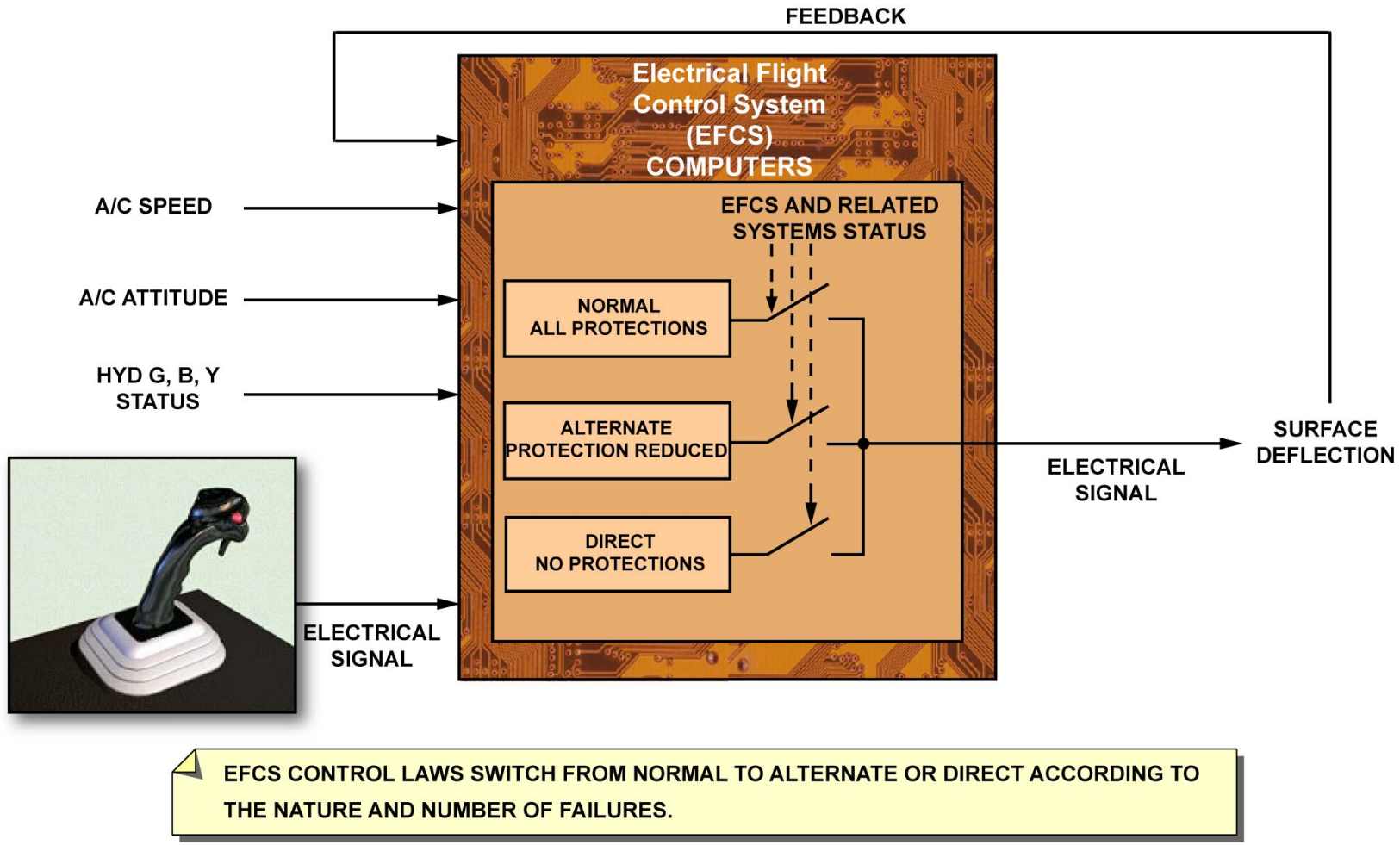
In normal condition, the normal law is used to compute the surface deflection orders.
Normal laws provide full flight phase envelope protection. This means that the aircraft will be protected from excessive maneuvers during all flight phases.

ALTERNATE LAW

The alternate law is automatically introduced as soon as the normal law is lost due to system failures.
The alternate law gives reduced protection.

DIRECT LAW

The direct law is automatically introduced when further failures occur.
In direct law all protections are lost. There is a direct relationship between the side stick orders and the surface.
The direct law is automatically activated on ground.

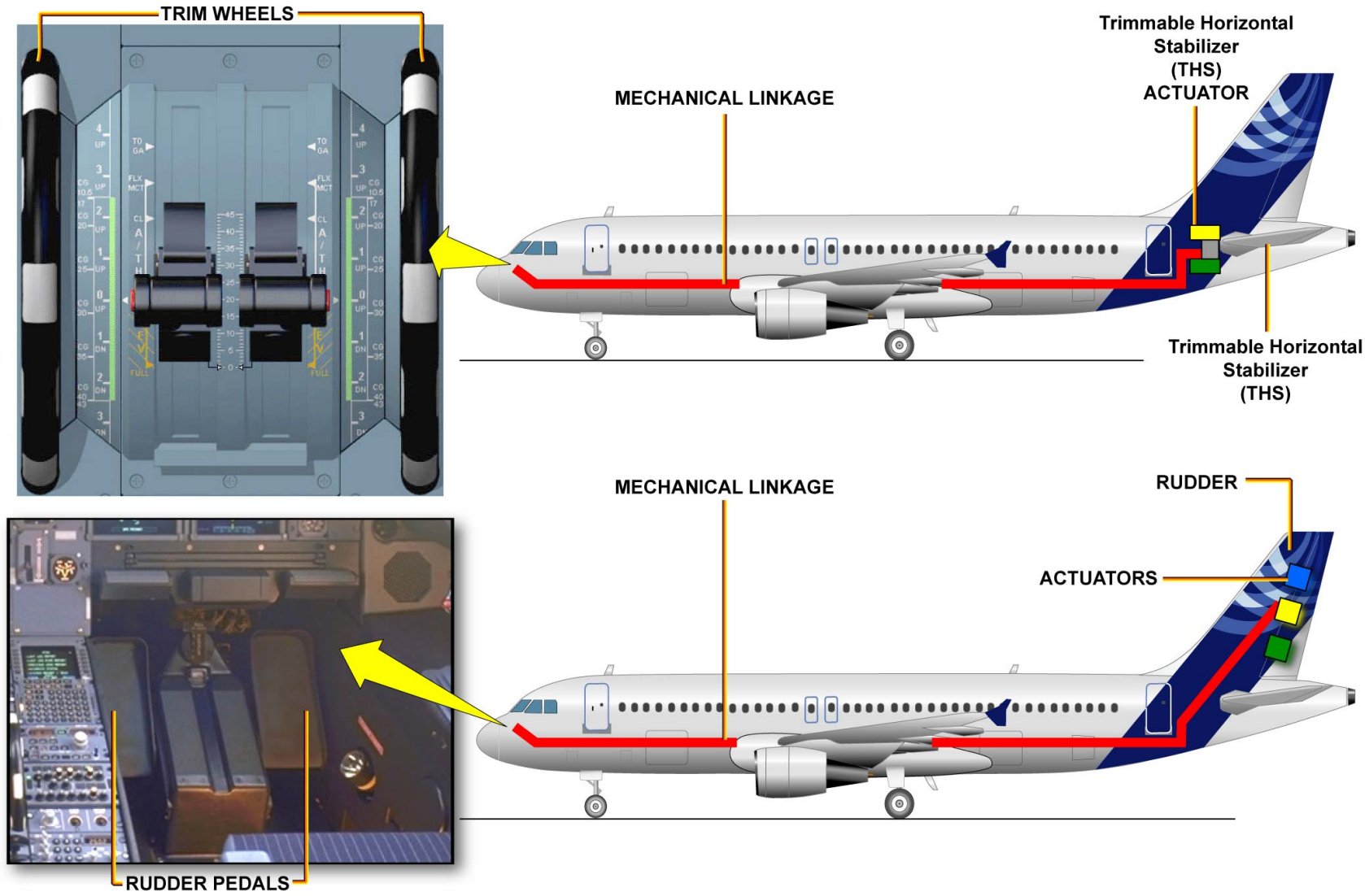

FEEDBACK
Electrical Flight Control System (EFCS) COMPUTERS
EFCS AND RELATED SYSTEMS STATUS
A/C SPEED
A/C ATTITUDE
HYD G, B, Y STATUS
NORMAL ALL PROTECTIONS
ALTERNATE PROTECTION REDUCED
DIRECT NO PROTECTIONS
ELECTRICAL SIGNAL
SURFACE DEFLECTION
ELECTRICAL SIGNAL
EFCS CONTROL LAWS SWITCH FROM NORMAL TO ALTERNATE OR DIRECT ACCORDING TO THE NATURE AND NUMBER OF FAILURES.

FLIGHT CONTROL LAWS - NORMAL LAW ... DIRECT LAW

27 FLIGHT CONTROLS PRESENTATION (1)

MECHANICAL BACK-UP

The mechanical back-up lets the aircraft be controlled during a temporary complete loss of electrical power or flight controls computers.
Longitudinal control is achieved using the trim wheels to control the THS, as the elevators are kept at zero deflection.
Lateral control is achieved from the rudder pedals.
Hydraulic power is still needed to operate the surfaces of the THS and the Rudder.



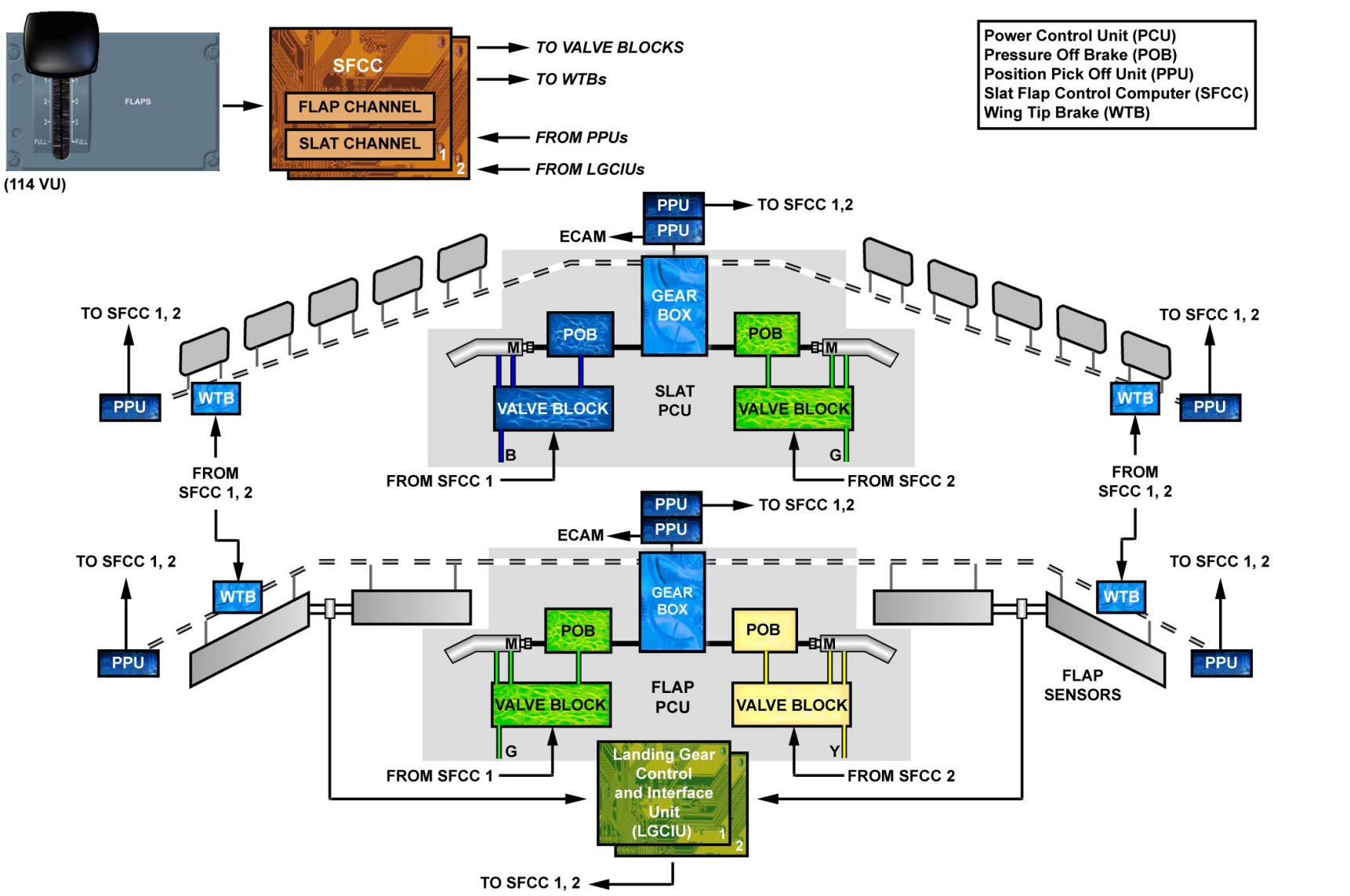
MECHANICAL BACK-UP

27 FLIGHT CONTROLS PRESENTATION (1)

SLAT AND FLAP SYSTEM

The slats and flaps are electrically controlled and hydraulically operated.
Two SFCCs ensure control and monitoring. Each computer has one slat and one flap channel.
The slat and flap systems are similar.
Each system is driven by a Power Control Unit (PCU) with two hydraulic motors coupled by a differential gearbox.
Then torque shafts and gearboxes transmit the mechanical power to the actuators which drive the surfaces.
Each motor is powered by a different hydraulic system and has its own valve block and Pressure Off Brake (POB).
Valve blocks control the direction of rotation and the speed of their related PCU output shaft.
The POB locks the transmission when the slat and flap surfaces have reached the selected position or if hydraulic power fails.
Wing Tip Brakes (WTBs) are provided in order to stop and lock the system when major failures are detected. They are hydraulically activated and can only be reset on ground.
Position Pick-Off Units (PPUs) send slat and flap position feedback to the SFCCs and ECAM.
Flap sensors installed between inboard and outboard flaps inhibit further flap operation when a flap attachment failure is detected.
The signal is sent to the SFCCs via the Landing Gear Control and Interface Units (LGCIU)
To prevent an aircraft stall, slats cannot be fully retracted at high angles of attack or low speeds (Alpha/speed lock function).

UGB13131 - U2AT4M0 - UM27PZ00000002

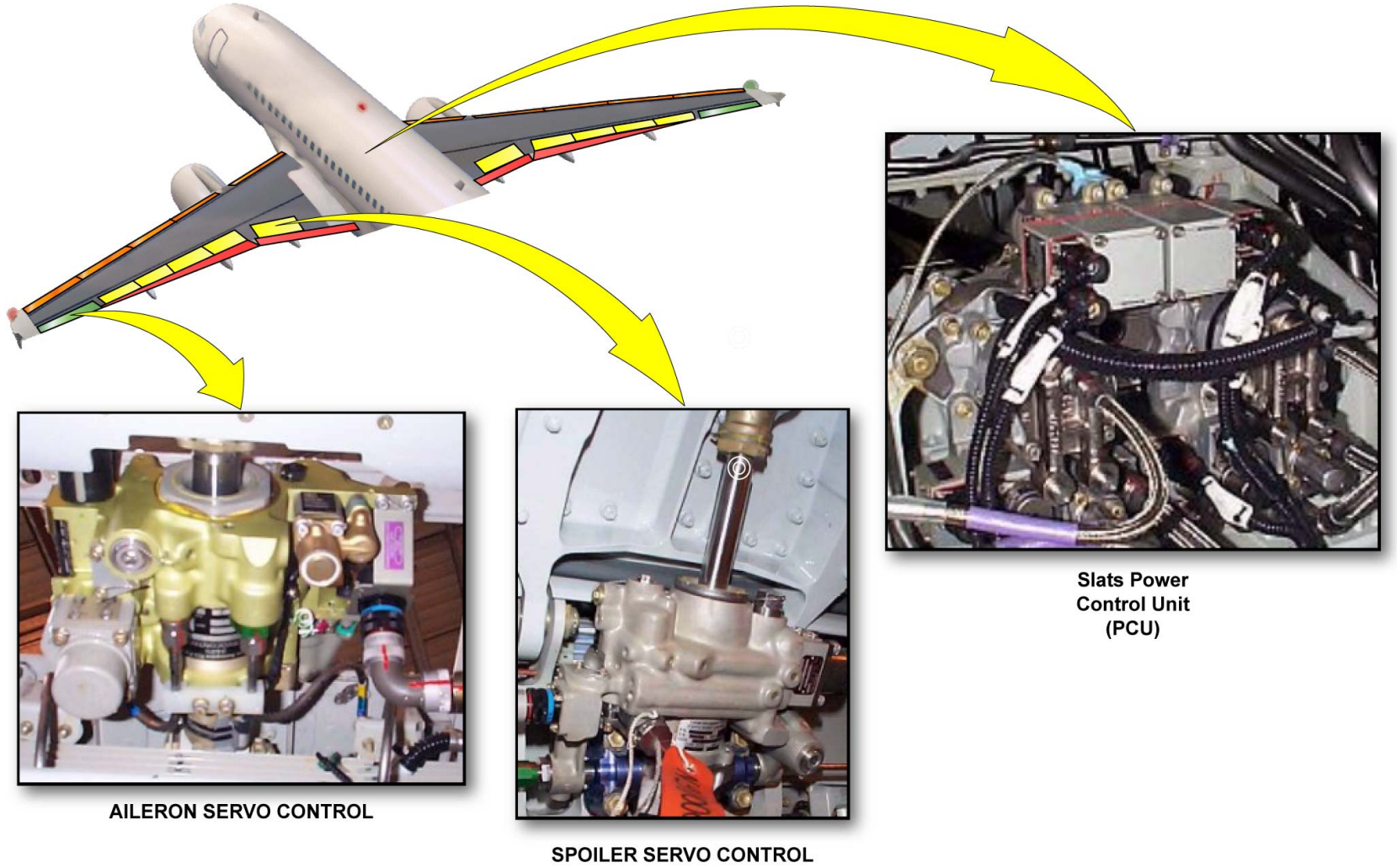


SLAT AND FLAP SYSTEM

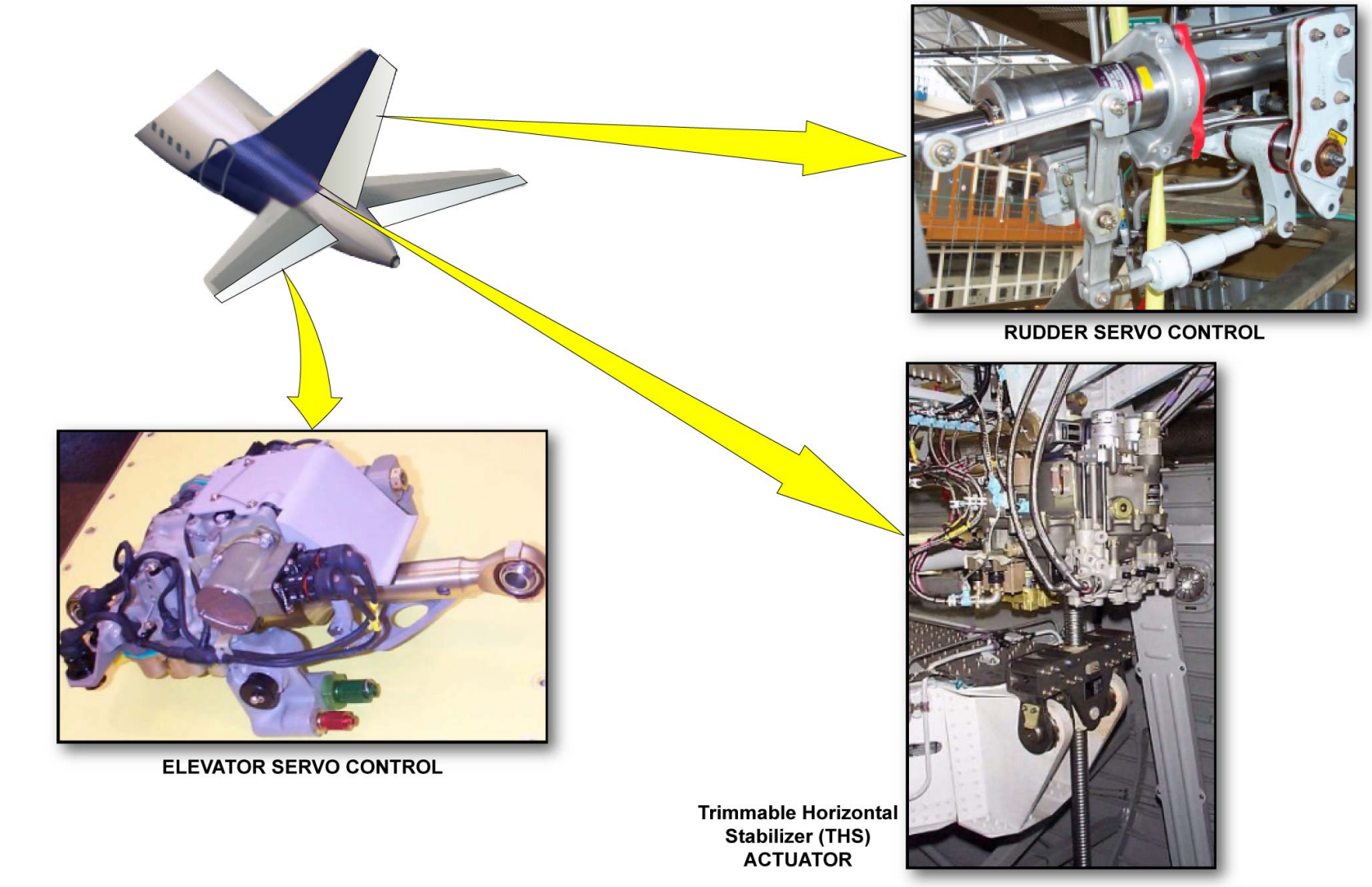
27 FLIGHT CONTROLS PRESENTATION (1)

ACTUATORS

The Aileron surface is powered by two servo controls.
Each Spoiler surface is powered by a single servo control.
The Flaps and Slats surfaces are powered by their dedicated PCU.
The Rudder surface is powered by 3 servo controls.
The THS is moved by one actuator.
The Elevator surface is powered by two servo controls.


Slats Power
Control Unit
(PCU)
AILERON SERVO CONTROL
SPOILER SERVO CONTROL

ACTUATORS


RUDDER SERVO CONTROL
ELEVATOR SERVO CONTROL
Trimmable Horizontal
Stabilizer (THS)
ACTUATOR

ACTUATORS

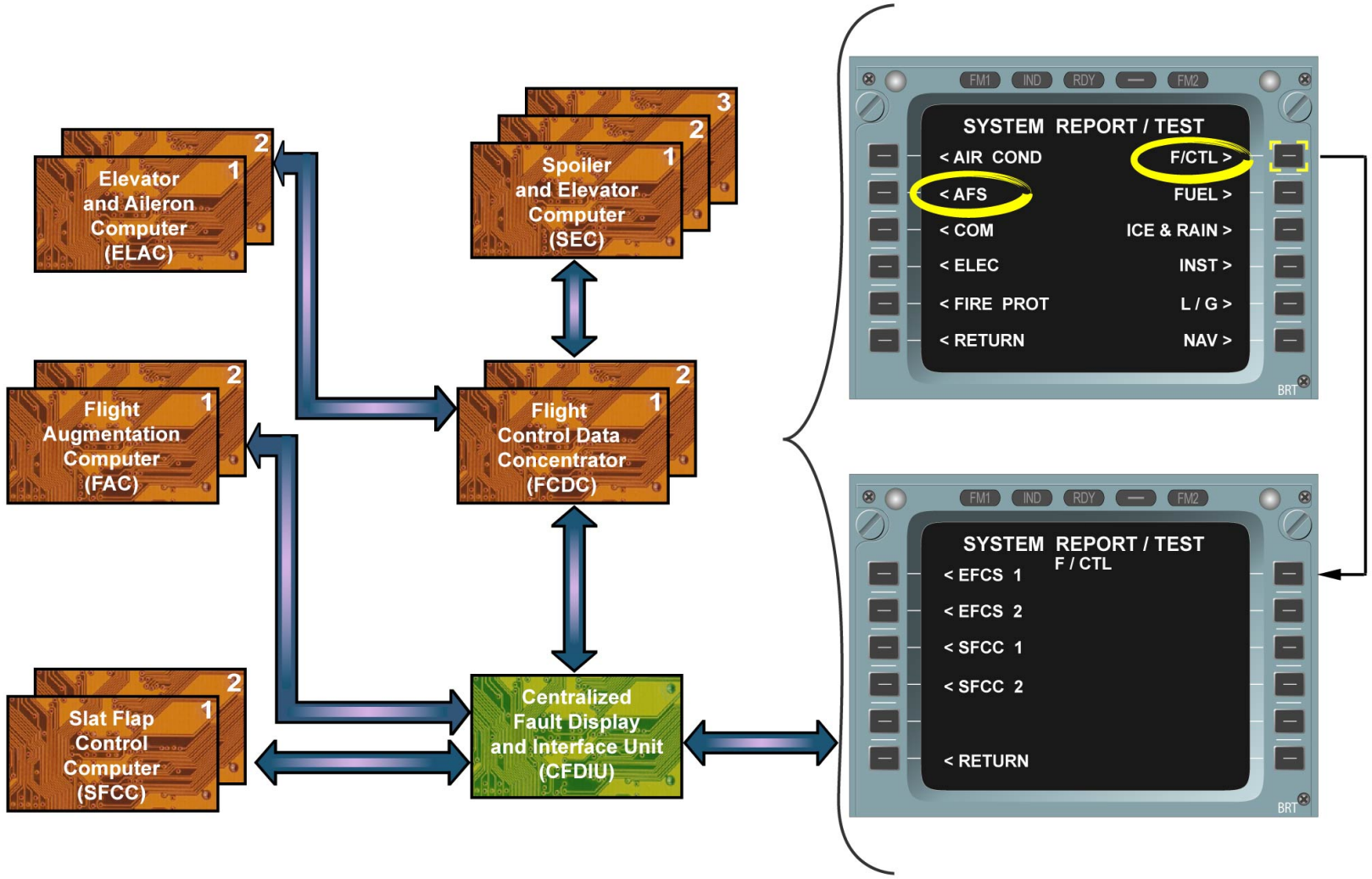
This Page Intentionally Left Blank

27 FLIGHT CONTROLS PRESENTATION (1)

MAINTENANCE TEST FACILITIES

All computers in the flight control systems can be tested via the MCDU.

NOTE: The FACs as Auto Flight System (AFS) computers are tested via the AFS select key on the MCDU.



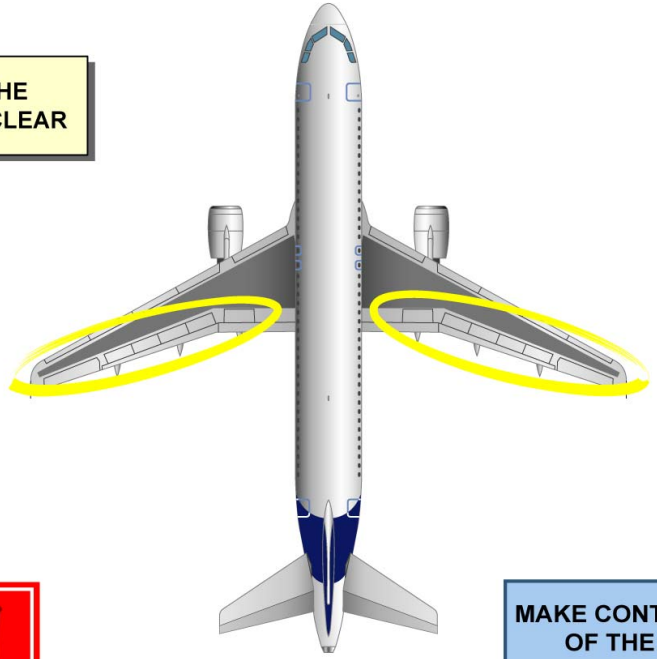
MAINTENANCE TEST FACILITIES

27 FLIGHT CONTROLS PRESENTATION (1)

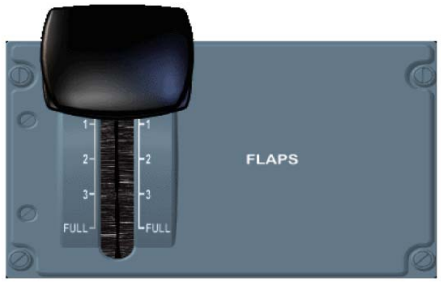
SAFETY PRECAUTIONS

When you work on flight controls, make sure that you obey all the AMM safety procedures. This will prevent injury to persons and /or damage to the aircraft.
Put safety devices and warning notices in position before you start a task on or near flight controls.
Make sure that the controls agree with the position of the flight control surfaces before you pressurize hydraulic system.
Make sure that the travel ranges of the flight control surfaces are clear.
Movement of flight controls can cause injury to persons and/or damage to the aircraft.

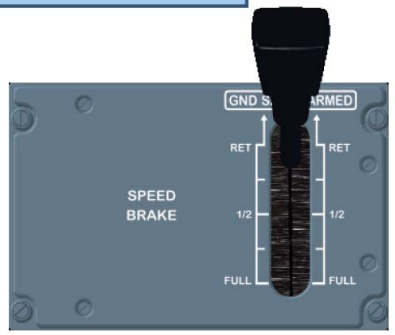
THE TRAVEL RANGES OF THE FLIGHT CONTROLS MUST BE CLEAR



MAKE CONTROLS AGREE WITH THE POSITION OF THE FLIGHT CONTROL SURFACES



(11VU)



(114VU)

SAFETY PRECAUTIONS

27 FLIGHT CONTROLS PRESENTATION (1)

DYNAMIC TESTS

When you perform operational tests, the flight control surfaces move.

WARNING

BEWARE: THE FLIGHT CONTROL TESTS ARE DYNAMIC, MAINTENANCE TEAMS MUST FOLLOW SAFETY RECOMMENDATIONS TO PREVENT INJURY TO PERSONS AND/OR DAMAGE TO EQUIPMENT.

DYNAMIC TESTS

51 STRUCTURE PRESENTATION (1)

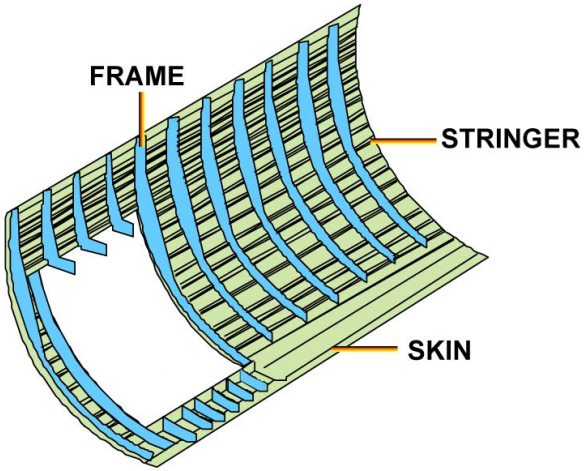
STRUCTURE DESIGN PRINCIPLES

Four typical principles are used in the aircraft design:
- for the fuselage, the skin is attached to the frames and stiffened by stringers,
- for the boxes, the skins stiffened with stiffeners are attached to spars and ribs,
- the composite parts could be monolithic or sandwich construction.

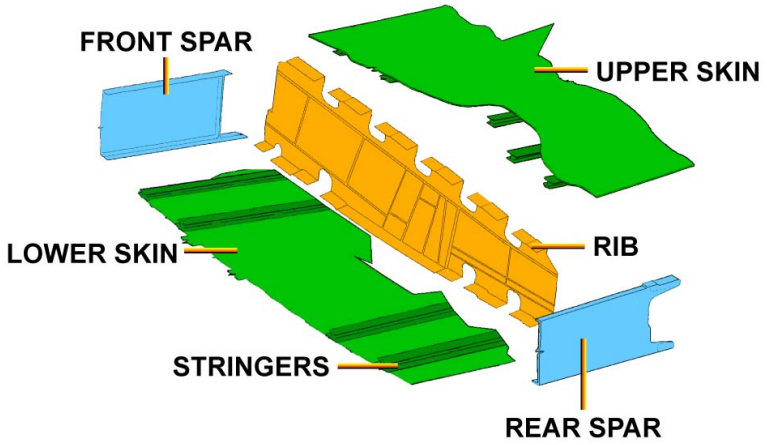
UGB13131 - U2AT4M0 - UM51PZ00000001

METALLIC

FUSELAGE STRUCTURE PRINCIPLE

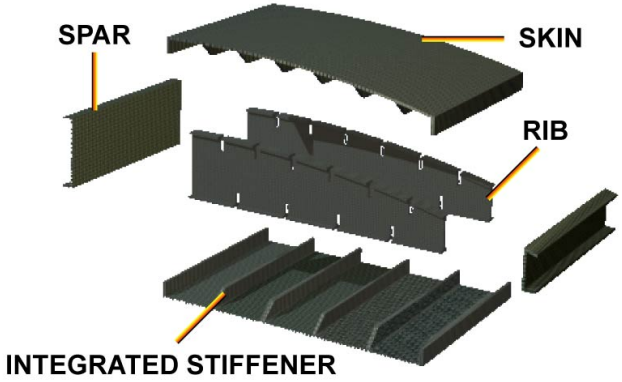


WINGBOX STRUCTURE PRINCIPLE

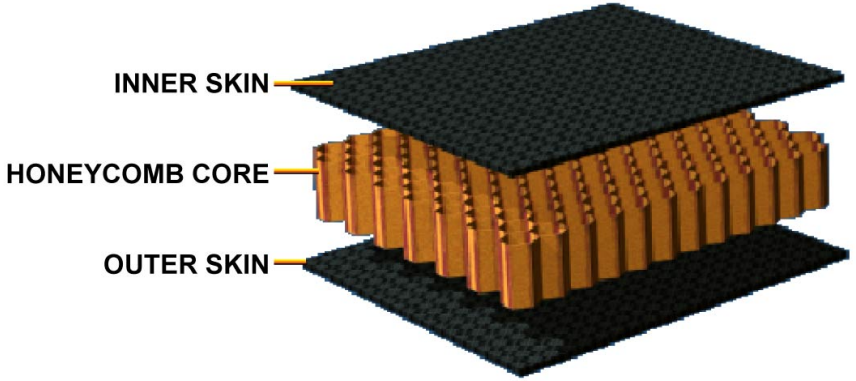


COMPOSITE

MONOLITHIC SKIN



SANDWICH PART STRUCTURE PRINCIPLE



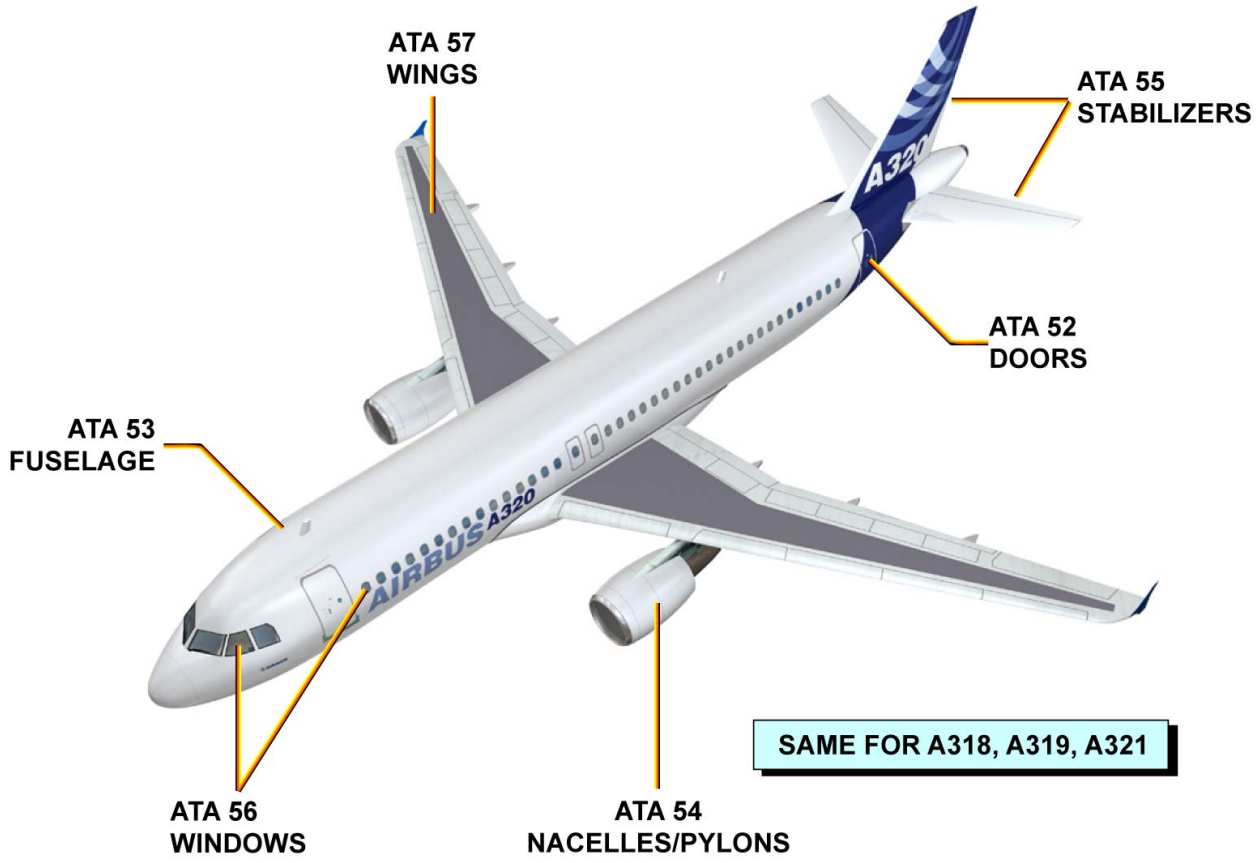
STRUCTURE DESIGN PRINCIPLES

51 STRUCTURE PRESENTATION (1)

STRUCTURE ATA BREAKDOWN

The structure of the aircraft is broken down as follows:
- ATA 52 for the doors,
- ATA 53 for the fuselage,
- ATA 54 for the pylons,
- ATA 55 for the stabilizers,
- ATA 56 for the windows,
- ATA 57 for the wings.

UGB13131 - U2AT4M0 - UM51PZ00000001



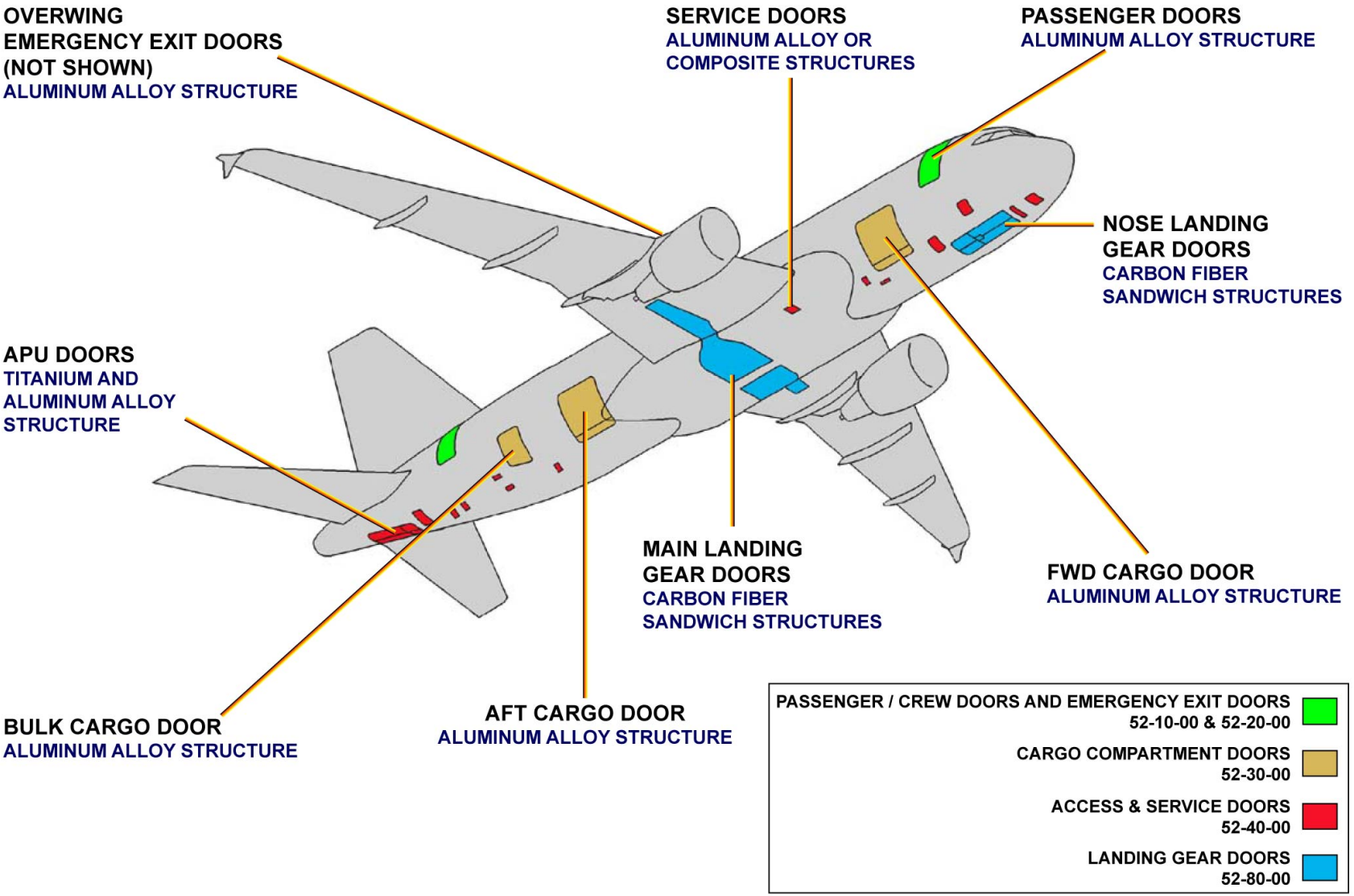
STRUCTURE ATA BREAKDOWN

51 STRUCTURE PRESENTATION (1)

DOORS

The passenger/crew doors and the emergency exit doors are of same aluminum alloy design comprising skins, edge members, horizontal beams and vertical frames.
There are three cargo compartment doors installed on the right side of the fuselage. The forward and the aft cargo doors are also aluminum alloy structures consisting of skins, edge members, corner pieces, horizontal beams and vertical frames.
The bulk cargo door is of plug type design opening inside the fuselage. The primary structure comprise skins, edge members and horizontal beams both being made from aluminum alloy.
The main landing gear doors are fitted at the lower part of the center fuselage.
They have:
- two main doors, hinged to the two longitudinal boxes of the keel beam,
- two hinged door,
- and two leg fairing doors.

All doors are of composite construction, including carbon fiber skins.
The nose landing gear doors have two forward doors, two aft doors and one fixed door. The fixed door is made of aluminum alloy, the other doors are made of sandwich type CFRP composite.


OVERWING
EMERGENCY EXIT DOORS
(NOT SHOWN)
ALUMINUM ALLOY STRUCTURE
SERVICE DOORS
ALUMINUM ALLOY OR
COMPOSITE STRUCTURES
PASSENGER DOORS
ALUMINUM ALLOY STRUCTURE
NOSE LANDING
GEAR DOORS
CARBON FIBER
SANDWICH STRUCTURES
APU DOORS
TITANIUM AND
ALUMINUM ALLOY
STRUCTURE
MAIN LANDING
GEAR DOORS
CARBON FIBER
SANDWICH STRUCTURES
FWD CARGO DOOR
ALUMINUM ALLOY STRUCTURE
BULK CARGO DOOR
ALUMINUM ALLOY STRUCTURE
AFT CARGO DOOR
ALUMINUM ALLOY STRUCTURE
PASSENGER / CREW DOORS AND EMERGENCY EXIT DOORS
52-10-00 & 52-20-00
CARGO COMPARTMENT DOORS
52-30-00
ACCESS & SERVICE DOORS
52-40-00
LANDING GEAR DOORS
52-80-00

DOORS

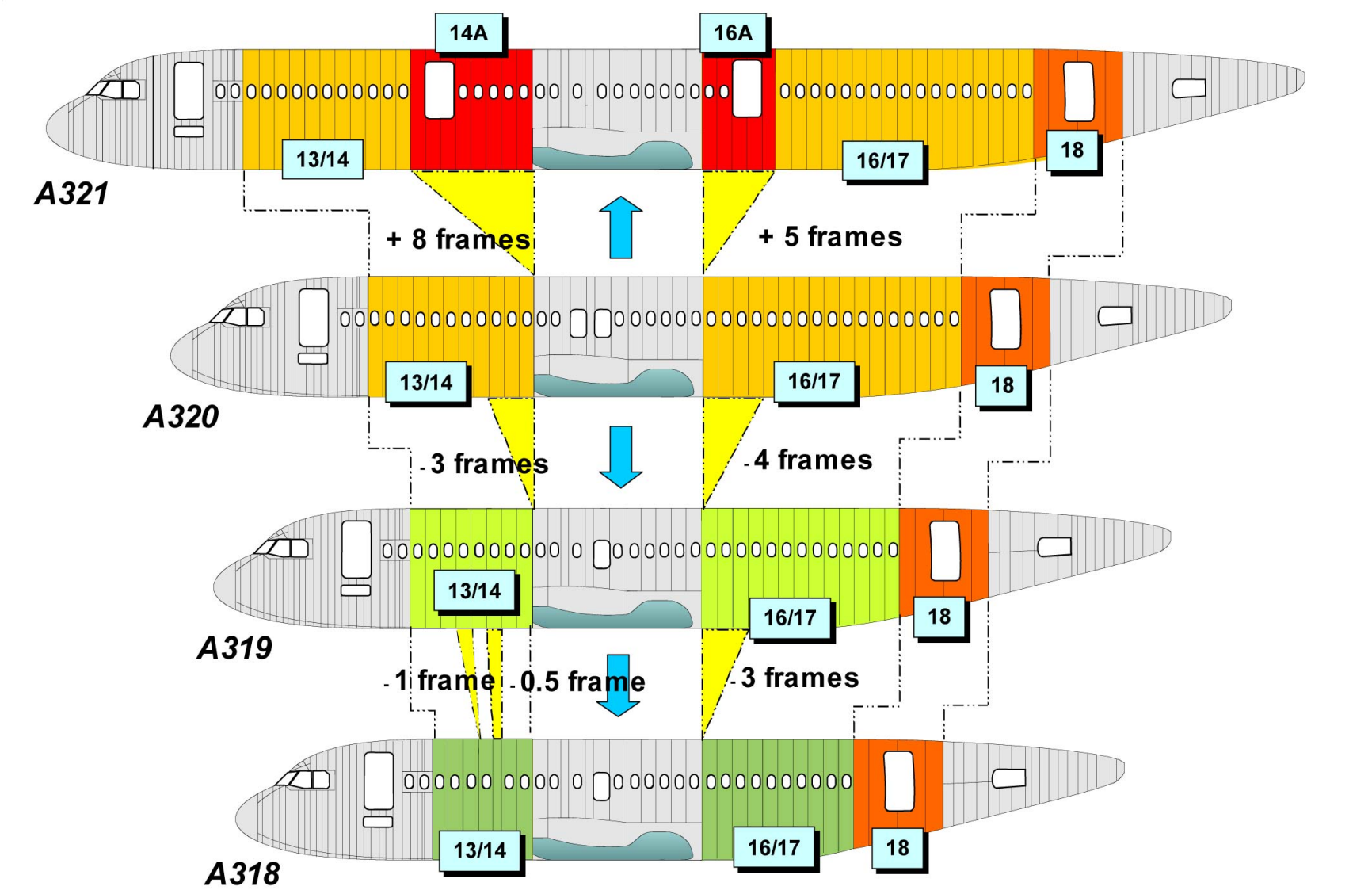
51 STRUCTURE PRESENTATION (1)

FUSELAGE

Within the technical documentation the fuselage is divided into five main parts which are also divided into sections mainly for production purpose:
- the nose forward fuselage covered by chapter 53-10-00 and containing sections 11 and 12,
- the forward fuselage covered by chapter 53-20-00 and containing the sections 13, or 13/14, depending on A/C model,
- the center fuselage covered by chapter 53-30-00 which is also the section 15/21,
- the rear fuselage covered by chapter 53-40-00 and containing the sections 16, 17 and 18,
- the rear/cone fuselage covered by chapter 53-50-00 and containing the sections 19 and the tail cone, section 19.1.

The A321, A320, A319 and A318 have the same fuselage sections. The A321 is a stretched version of the A320 with 8 frames added FWD of the center section and 5 frames added AFT of the center section.
The A319 is a shortened version of the A320 with 3 frames removed FWD of the center section and 4 frames removed AFT the of the center section.
The A318 is a shortened version of the A319 with 1.5 frames removed FWD of the center section and 3 frames removed AFT of the center section.

UGB13131 - U2AT4M0 - UM51PZ000000001


14A
16A
13/14
16/17
18
A321
+ 8 frames
+ 5 frames
13/14
16/17
18
A320
- 3 frames
- 4 frames
13/14
16/17
18
A319
- 1 frame
- 0.5 frame
- 3 frames
13/14
16/17
18
A318

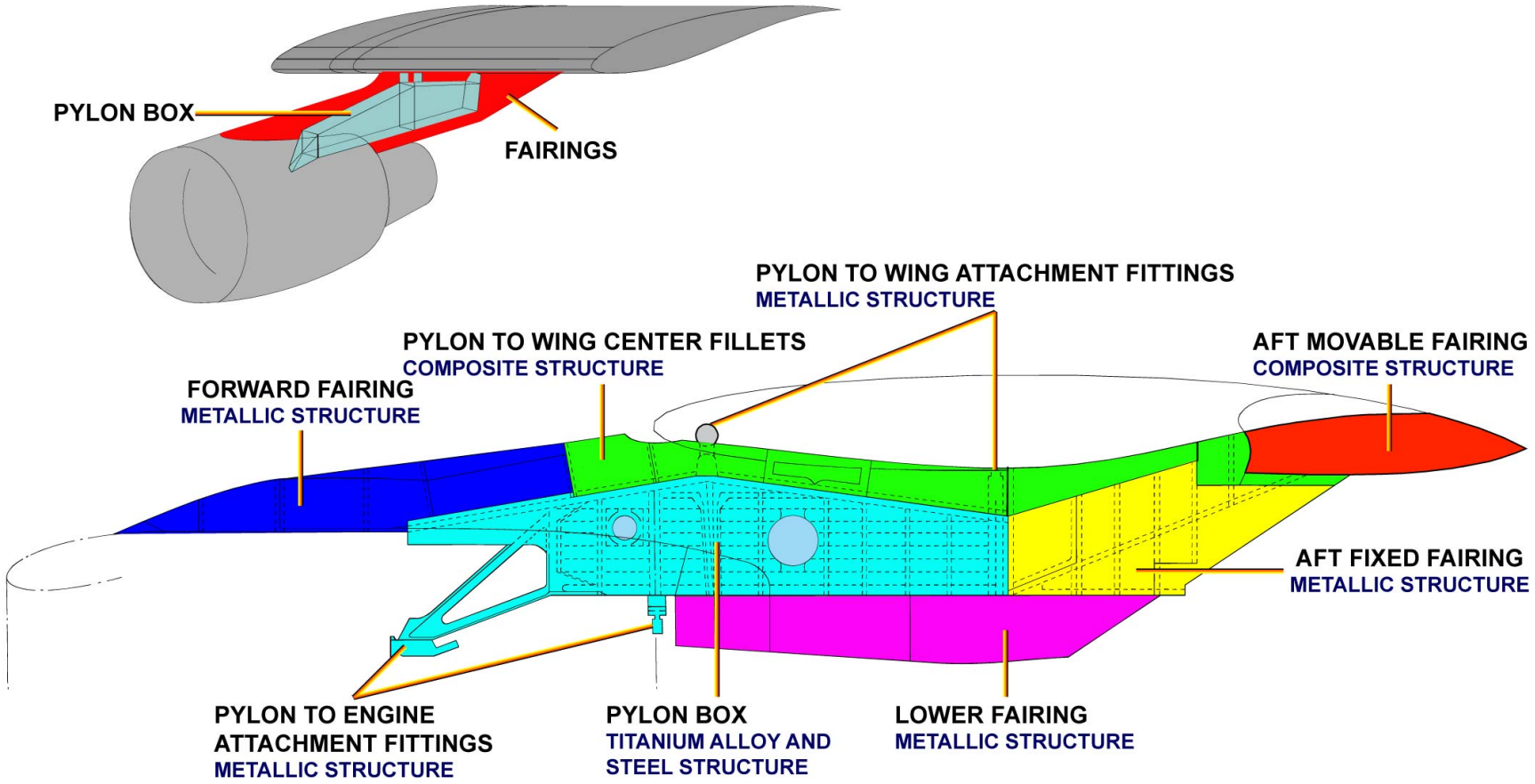
FUSELAGE

51 STRUCTURE PRESENTATION (1)

PYLONS

The pylon box is the primary structure of the pylon. The secondary structure comprises the forward, the lower and the aft fairings and the pylon to wing center fillets.
The pylon box is an assembly of titanium alloy and steel parts which includes spars, ribs, side panels, engine attachment, pylon to wing attachment fittings.

UGB13131 - U2AT4M0 - UM51PZ00000001


PYLON BOX
FAIRINGS
PYLON TO WING ATTACHMENT FITTINGS
METALLIC STRUCTURE
PYLON TO WING CENTER FILLETS
COMPOSITE STRUCTURE
FORWARD FAIRING
METALLIC STRUCTURE
AFT MOVABLE FAIRING
COMPOSITE STRUCTURE
AFT FIXED FAIRING
METALLIC STRUCTURE
PYLON TO ENGINE
ATTACHMENT FITTINGS
METALLIC STRUCTURE
PYLON BOX
TITANIUM ALLOY AND
STEEL STRUCTURE
LOWER FAIRING
METALLIC STRUCTURE

PYLONS

51 STRUCTURE PRESENTATION (1)

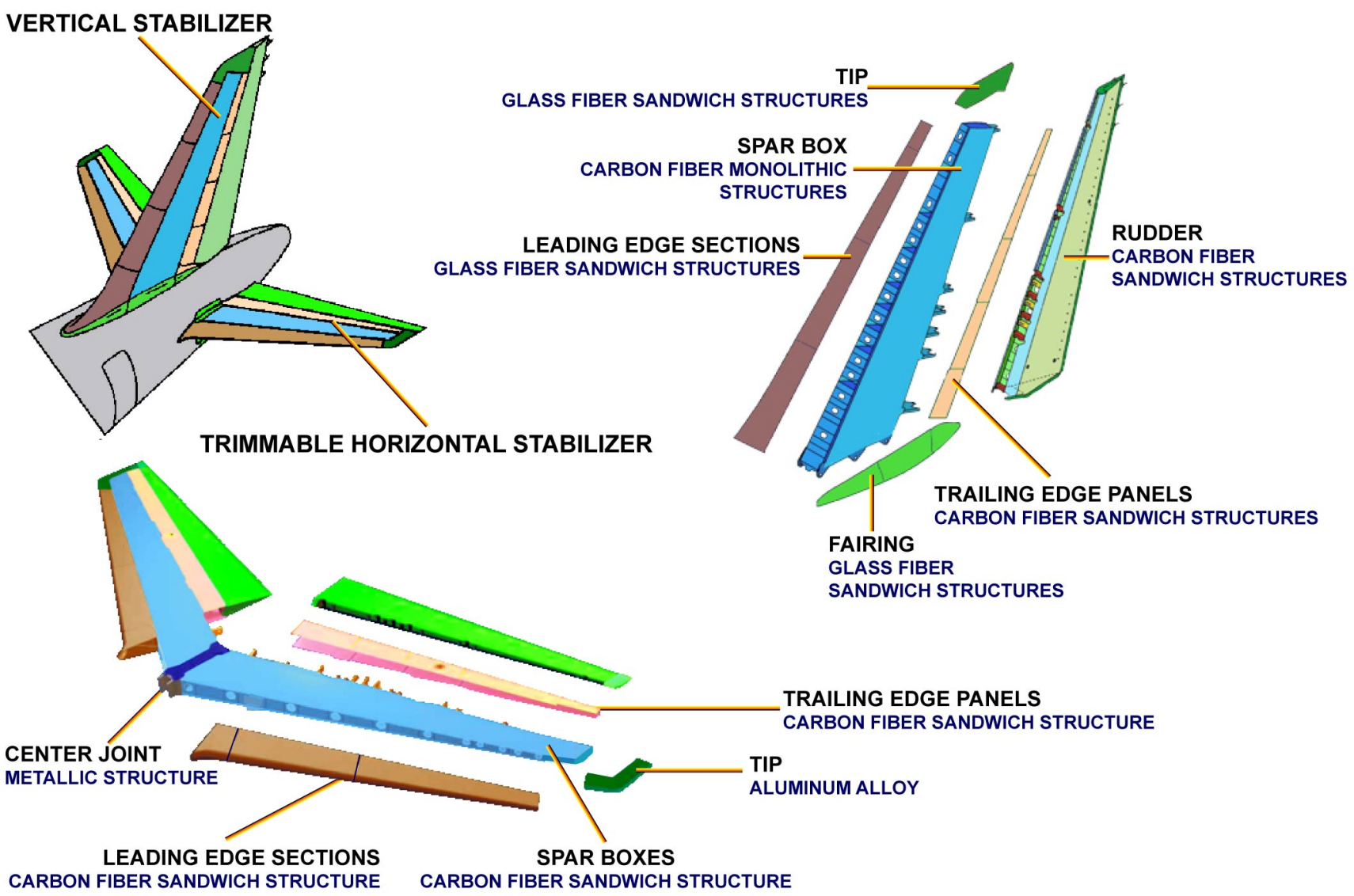
STABILIZERS - HORIZONTAL STABILIZER & ELEVATORS

The horizontal stabilizer main structure includes center joint and two outer spar boxes.
On each side, the horizontal stabilizer also includes a leading edge, a trailing edge structure, both being mainly made from Carbon Fiber Reinforced Plastic (CFRP) and a tip which is made of aluminum alloy.
The elevators are basically CFRP structure including top and bottom skin panels, ribs and front spar. The hinge and actuator fittings and the trailing edge profile are from aluminum alloy.
The vertical stabilizer structure has:
- the main spar box,
- the leading edge,
- the tip,
- and the trailing edge.

The main box is an assembly of CFRP ribs, spars and side panels.
The vertical stabilizer structure has also:
- a leading edge made of Glass Fiber Reinforced Plastic (GFRP),
- a tip made of GFRP,
- a trailing edge structure made of aluminum alloy,
- and trailing edge panels made of CFRP.

The rudder structure has:
- two side panels made of CFRP,
- a front spar made of CFRP,
- leading edge panels made of CFRP,
- hinge and actuator fittings made of aluminum alloy,
- and the trailing edge profile made of aluminum alloy.

UGB13131 - U2AT4M0 - UM51PZ00000001

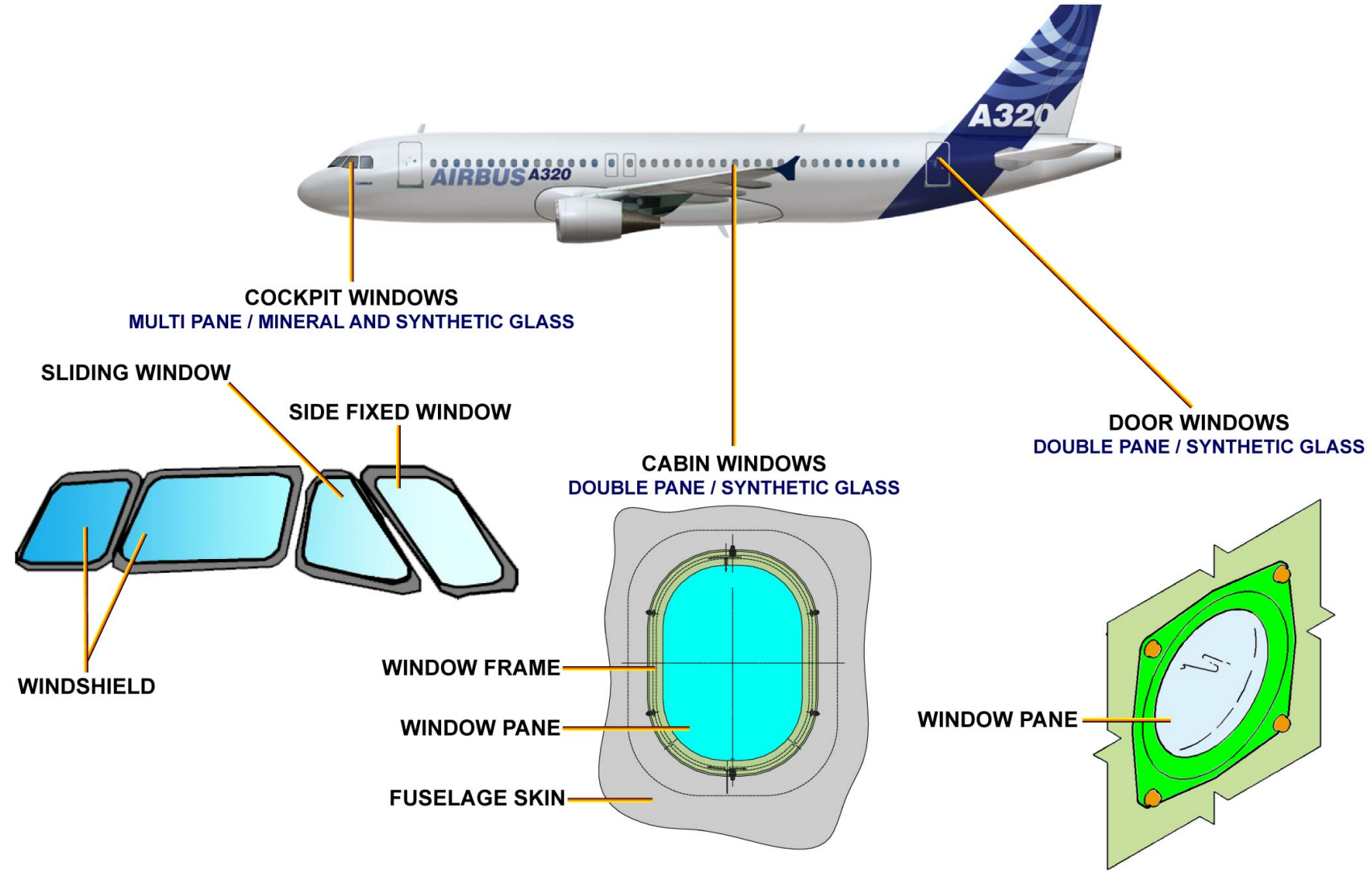


STABILIZERS - HORIZONTAL STABILIZER & ELEVATORS

51 STRUCTURE PRESENTATION (1)

WINDOWS

The ATA 56 chapter describes the cockpit, cabin and door windows.
The cockpit windows include the windshield, the sliding windows and the side fixed windows.
The cabin windows include an inner and an outer pane installed in a seal. This assembly is installed in the window frame from inside the fuselage and held in position by a retainer ring.
The door windows are of the same design principle as for the cabin windows.

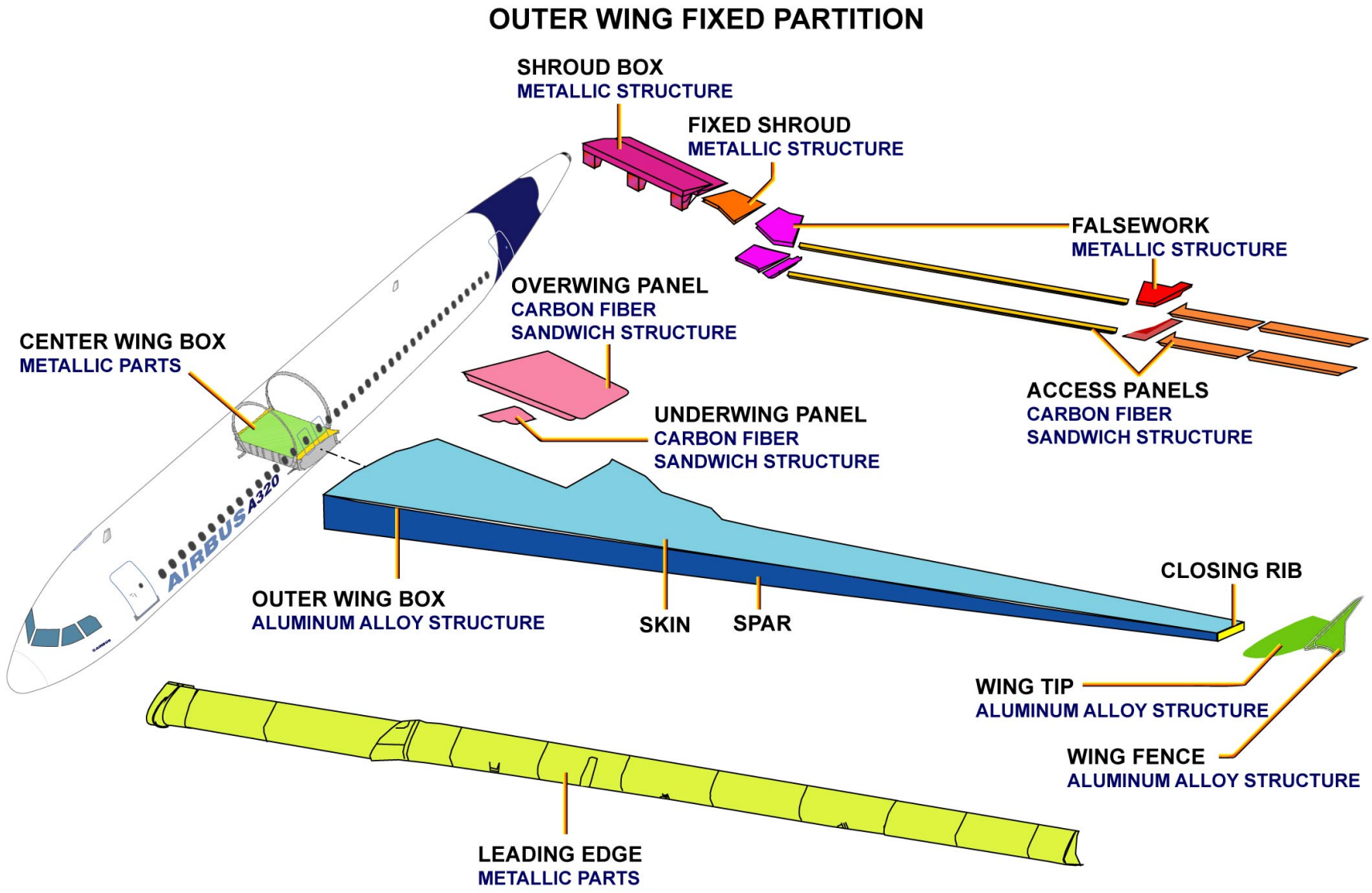

A320
AIRBUS A320
COCKPIT WINDOWS
MULTI PANE / MINERAL AND SYNTHETIC GLASS
SLIDING WINDOW
SIDE FIXED WINDOW
CABIN WINDOWS
DOUBLE PANE / SYNTHETIC GLASS
DOOR WINDOWS
DOUBLE PANE / SYNTHETIC GLASS
WINDSHIELD
WINDOW FRAME
WINDOW PANE
FUSELAGE SKIN
WINDOW PANE

WINDOWS

51 STRUCTURE PRESENTATION (1)

WINGS FIXED PARTITION

The wings consist in a center wing box which is installed in the center fuselage section and which provides the cantilever attachment of the outer wings. The center wing box is an assembly of aluminum alloy parts, located between frames 36 and 42. Each outer wing has a main box (outer wing box), which is the main load carrying structure. The main box supports a fixed leading edge structure, a fixed trailing edge structure and a wing tip.
The fixed leading edge structure has leading edge ribs, attached to the main box front spar, and which support the "D-nose" structure.
The fixed trailing edge structure includes hinge fittings and actuator fittings for the movable surfaces, and intermediate ribs. The access panels are made of CFRP.



WINGS FIXED PARTITION

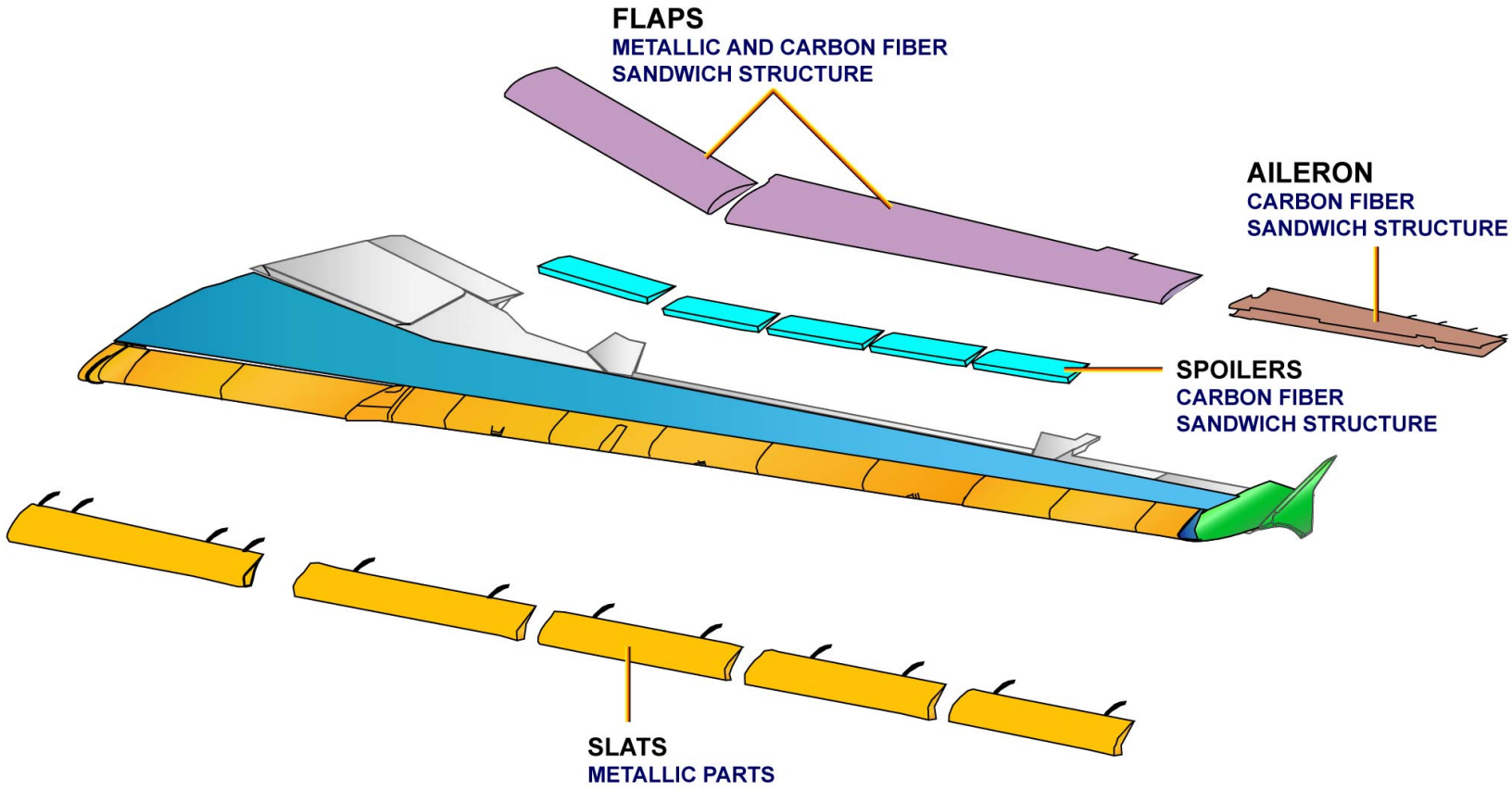
51 STRUCTURE PRESENTATION (1)

WINGS MOVABLE SURFACE

Each outer wing is fitted with:
- five slats made of aluminum alloy,
- an inboard flap and an outboard flap with a CFRP structure and a sandwich aluminum trailing edge structure,
- five CFRP spoilers,
- and one aileron, mainly made from CFRP.

UGB13131 - U2AT4M0 - UM51PZ00000001

OUTER WING MOVABLE SURFACES



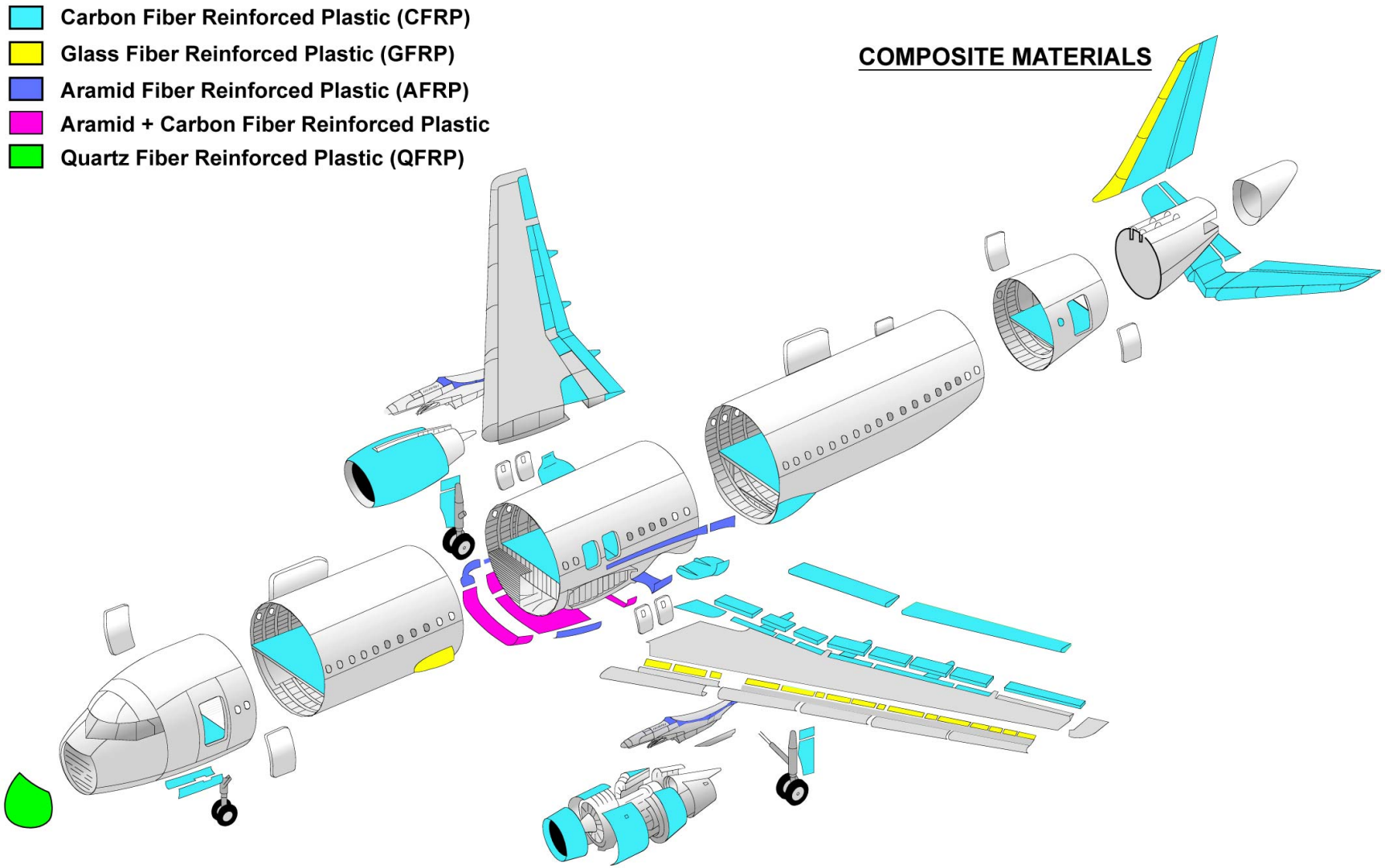
WINGS MOVABLE SURFACE

51 STRUCTURE PRESENTATION (1)

COMPOSITE APPLICATIONS

The illustration shows the main application of composite materials on A320 (same materials for other aircrafts).

UGB13131 - U2AT4M0 - UM51PZ00000001


Carbon Fiber Reinforced Plastic (CFRP)
Glass Fiber Reinforced Plastic (GFRP)
Aramid Fiber Reinforced Plastic (AFRP)
Aramid + Carbon Fiber Reinforced Plastic
Quartz Fiber Reinforced Plastic (QFRP)
COMPOSITE MATERIALS

COMPOSITE APPLICATIONS

00 SHARKLET PRESENTATION (1)

GENERAL

PURPOSE

The sharklets are specially designed for a better eco-efficiency and payload-range performance of the A320 family:
- less fuel burn,
- less CO2,
- revenue payload increased,
- higher range with the original payload,
- higher available takeoff weight,
- lower average takeoff thrust (with large savings in engine maintenance costs),
- lower takeoff noise,
- better climb performance,
- higher initial cruise altitude.

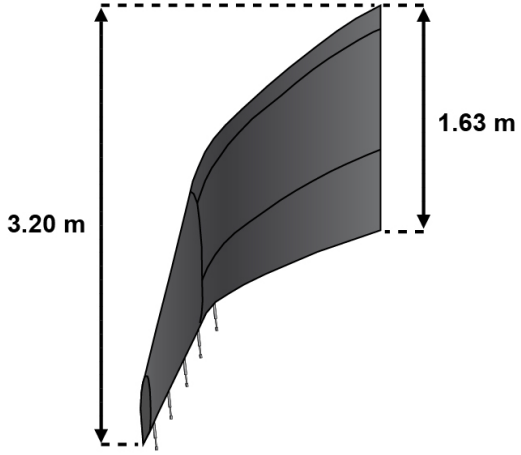
DIMENSIONS

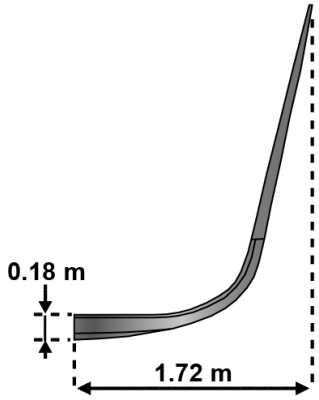
The picture shows the main dimensions of an A320 aircraft on which sharklets are installed.

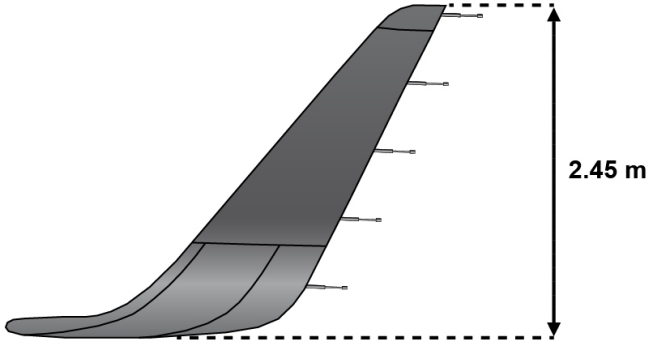
NOTE: The installation of sharklets does not change the A320 family airport classification (code C category).

UGB13131 - U2AT4M0 - UM01P3000000001

With sharklets installed, the A320 family has a better eco-efficiency and payload range:
- less fuel burn,
- less CO2,
- revenue payload increased,
- higher range with original payload,
- higher available takeoff weight,
- lower average takeoff thrust,
- lower takeoff noise,
- better climb performance,
- higher initial cruise altitude.







If you find static discharger damage, refer to the Configuration Deviation List.

GENERAL - PURPOSE & DIMENSIONS

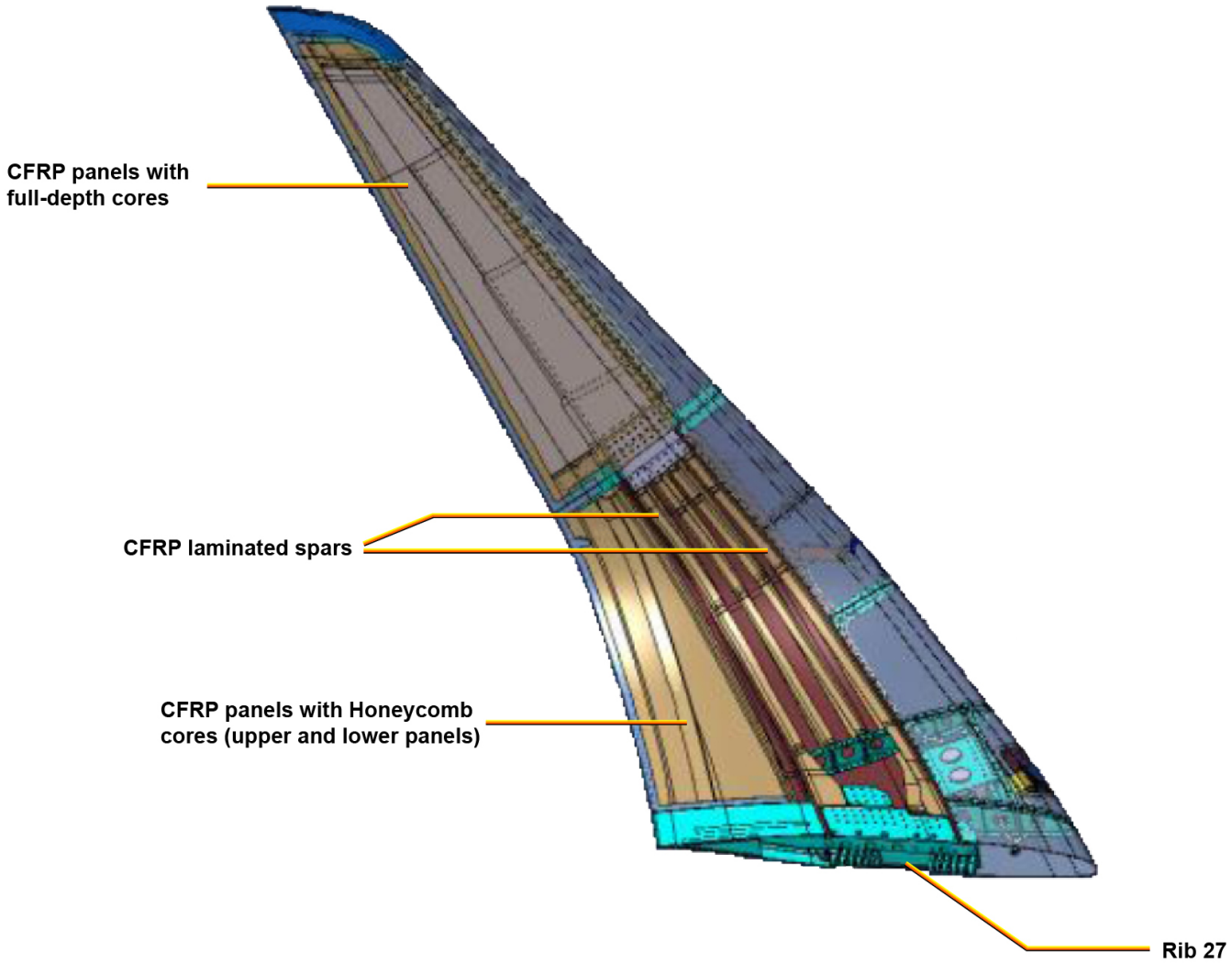
00 SHARKLET PRESENTATION (1)

GENERAL (continued)

STRUCTURE

The sharklets are mainly made from Carbon Fiber Reinforced Plastic (CFRP).
The junction between the wing and the sharklet is done through Rib 27, which is reinforced to have a better resistance against increased loads.

UGB13131 - U2AT4M0 - UM01P3000000001



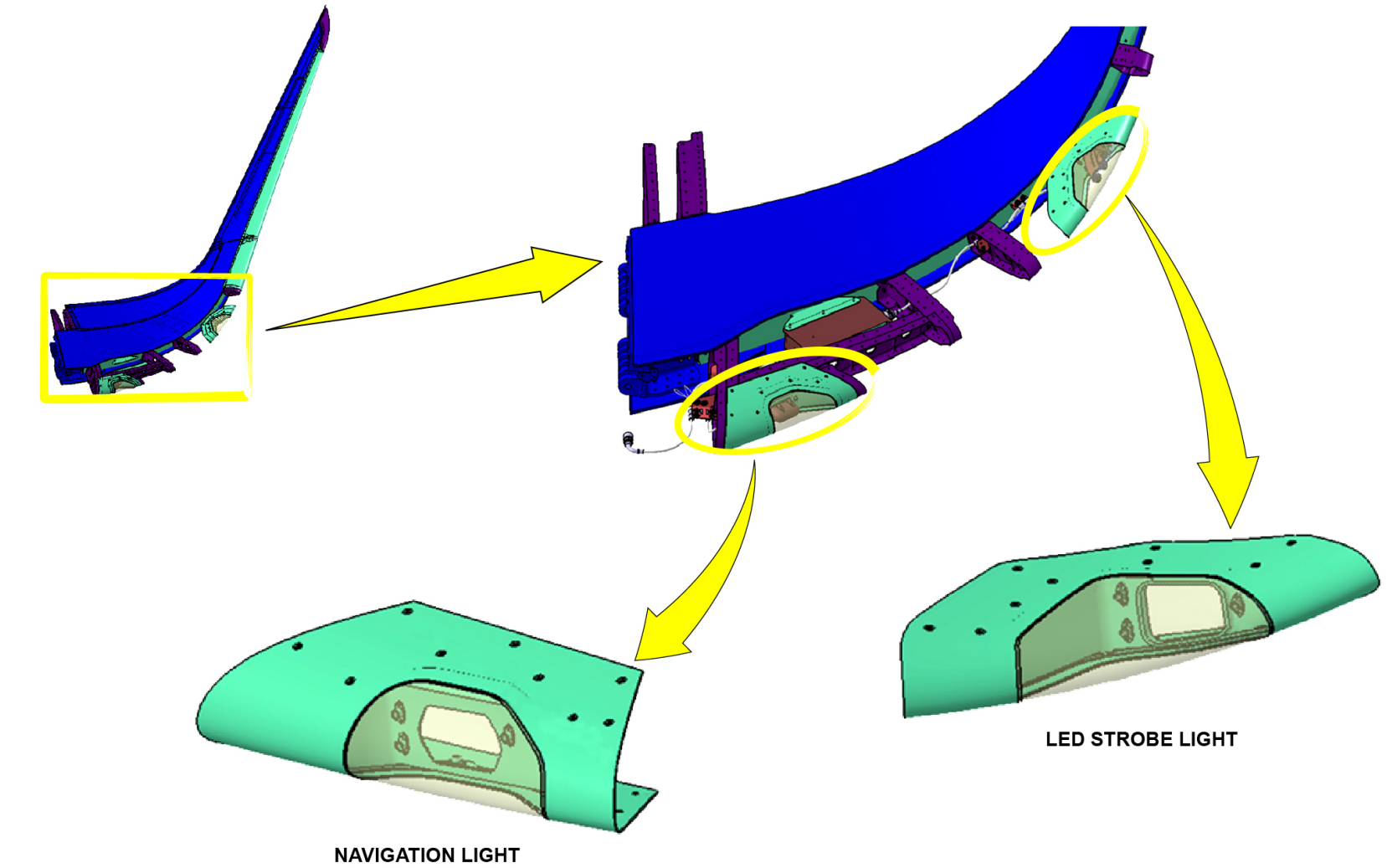
GENERAL - STRUCTURE

00 SHARKLET PRESENTATION (1)

GENERAL (continued)

LIGHTING

A new LED technology is used for the navigation lights and strobe lights installed on the sharklets.



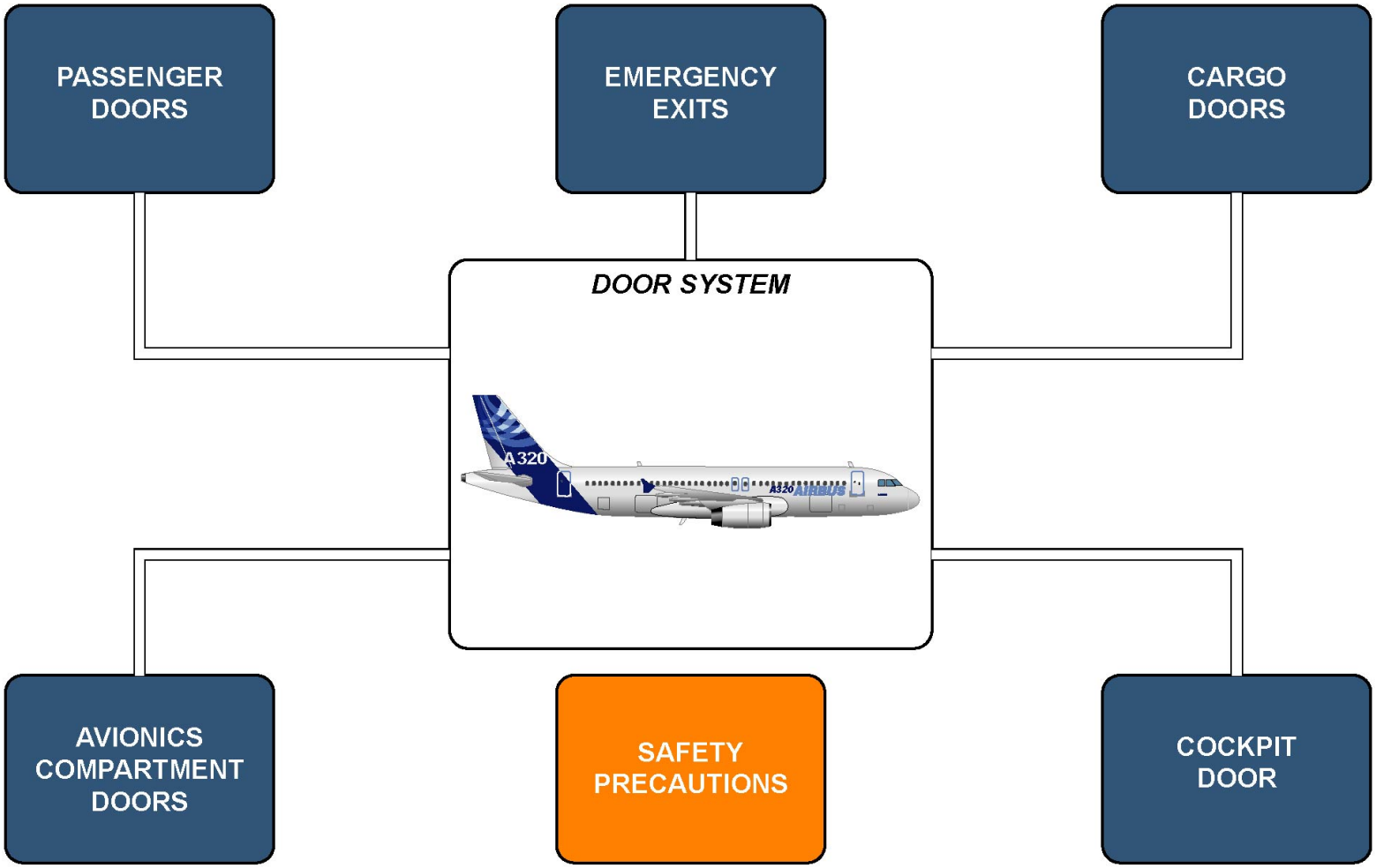
GENERAL - LIGHTING

52 DOORS PRESENTATION (1)

SYSTEM INTRODUCTION

The different doors are:
- passenger doors,
- emergency exits,
- cargo doors,
- avionics compartment doors,
- cockpit door.

UGB13131 - U2AT4M0 - UM52PZ00000002



SYSTEM INTRODUCTION

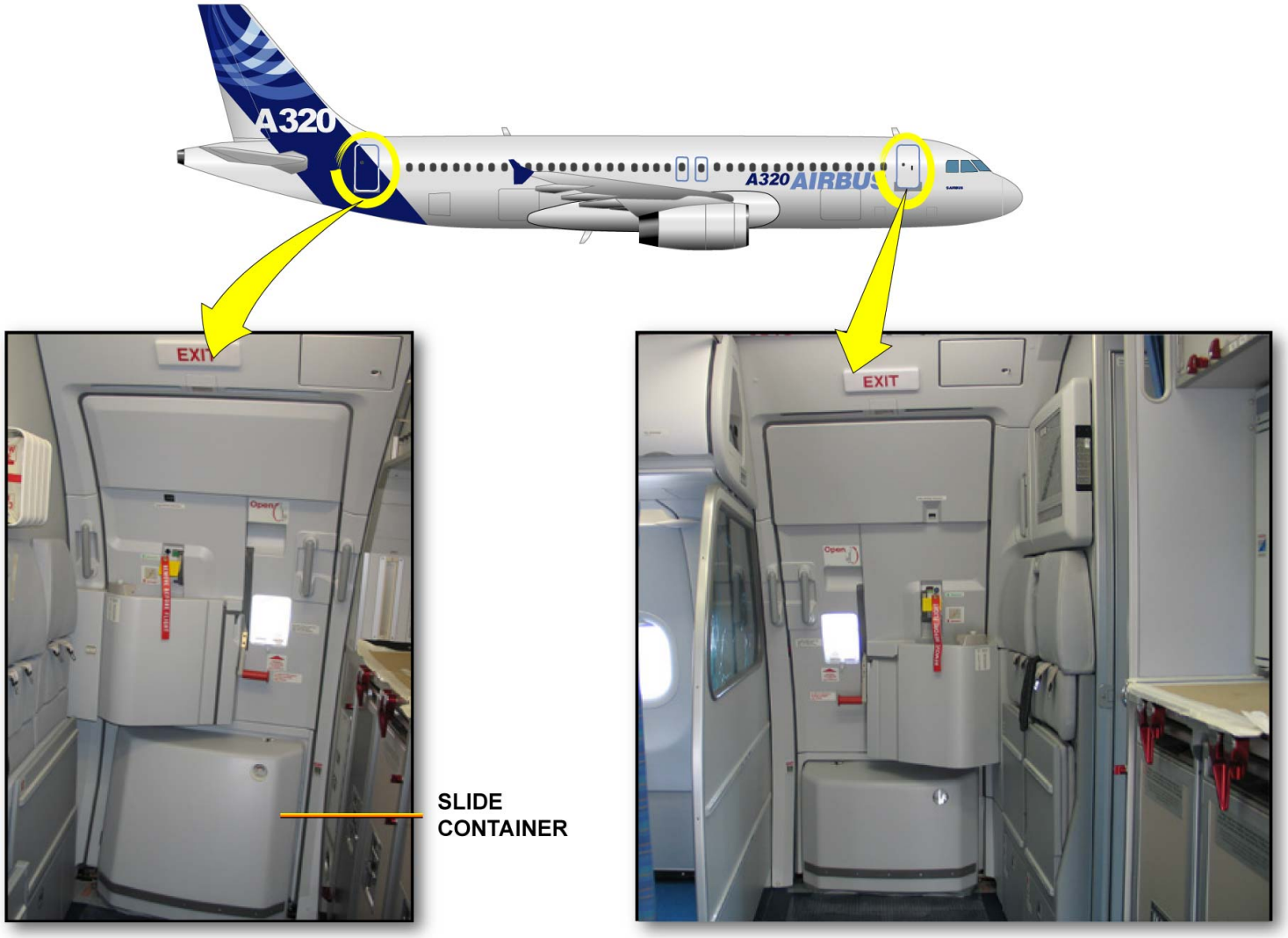
52 DOORS PRESENTATION (1)

PASSENGER DOORS

The single aisle family is equipped with two forward and two aft passenger doors.
The normal door operation is fully manual.
They are plug type doors, which open upward, outward and forward parallel to the fuselage.
The door can be operated from inside or outside the aircraft.
Each door is equipped with an emergency opening system:
- an escape slide or slide raft stowed in a container attached to the inboard lower side of the door,
- a door damping and emergency operation cylinder that assist normal door operation, but in an emergency acts as an actuator for automatic door opening,
- a slide ARMING/DISARMING lever.

When the slide arming lever is in the ARMED position, the slide is connected to the floor.
When the door is opened, the escape slide inflates automatically.
Opening the door from the outside will disarm the door and the escape slide.
The ECAM page indicates the door in the locking/unlocking position and the escape slide/slide raft in the armed/disarmed condition (position).

UGB13131 - U2AT4M0 - UM52PZ00000002



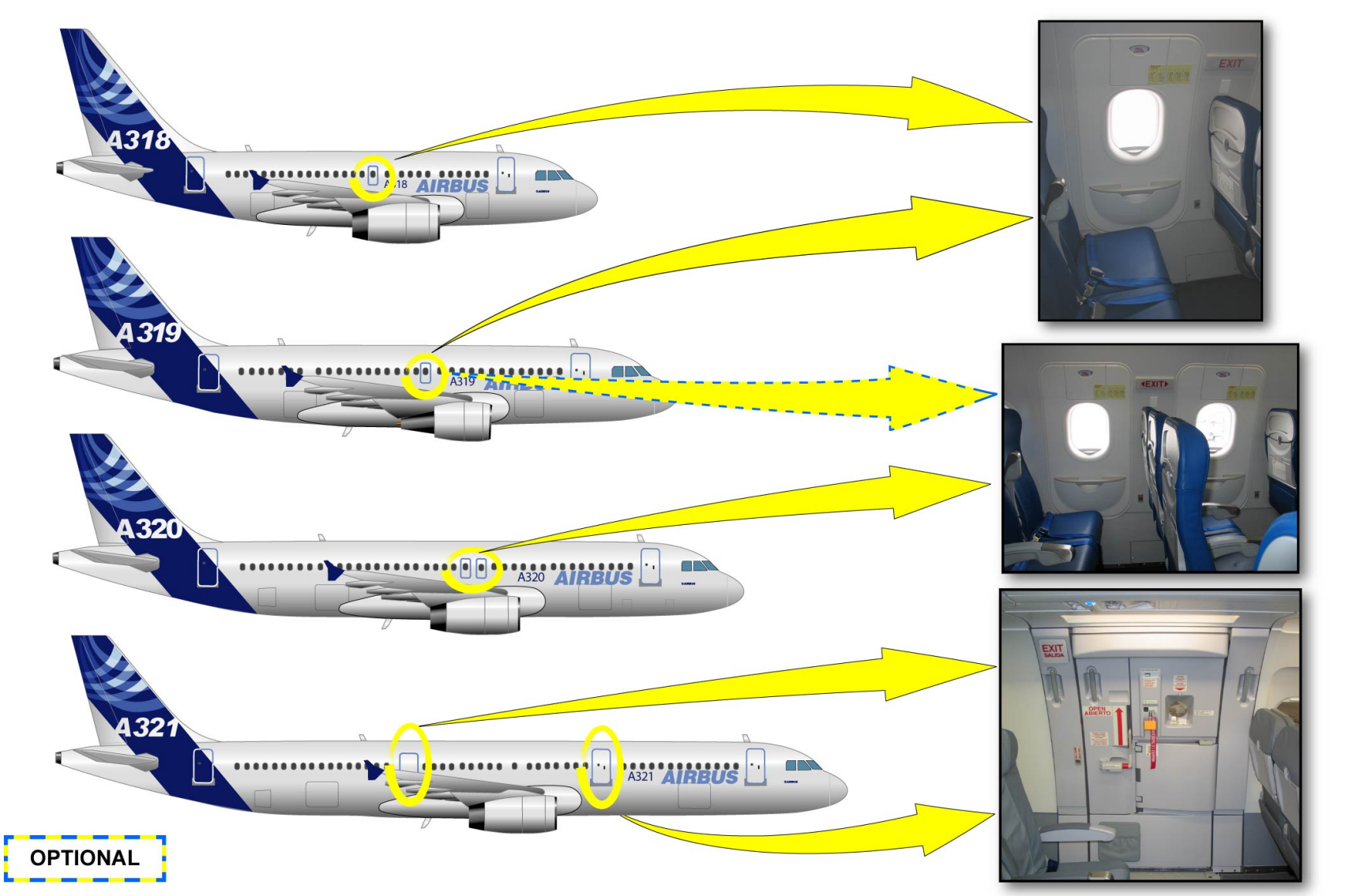
PASSENGER DOORS

52 DOORS PRESENTATION (1)

EMERGENCY EXITS

The A318 and A319 have two overwing emergency exits (one on each side). The A319 can also have four overwing emergency exits optionally (two on each side).
The A320 has four overwing emergency exits (two on each side).
The A321 aircraft has four emergency exits doors (two on each side) installed forward and aft of the wing.
On the A318, A319 and A320 aircraft, for emergency evacuation the exit can be opened from inside or outside the cabin to activate the evacuation system.
For normal operation, they are always armed.
To open the exit for maintenance work, authorized personnel must disarm it from inside the cabin.
The A321 exit can be opened from inside or outside.
These emergency exits are armed in flight but disarmed on ground.

UGB13131 - U2AT4M0 - UM52PZ00000002



EMERGENCY EXITS

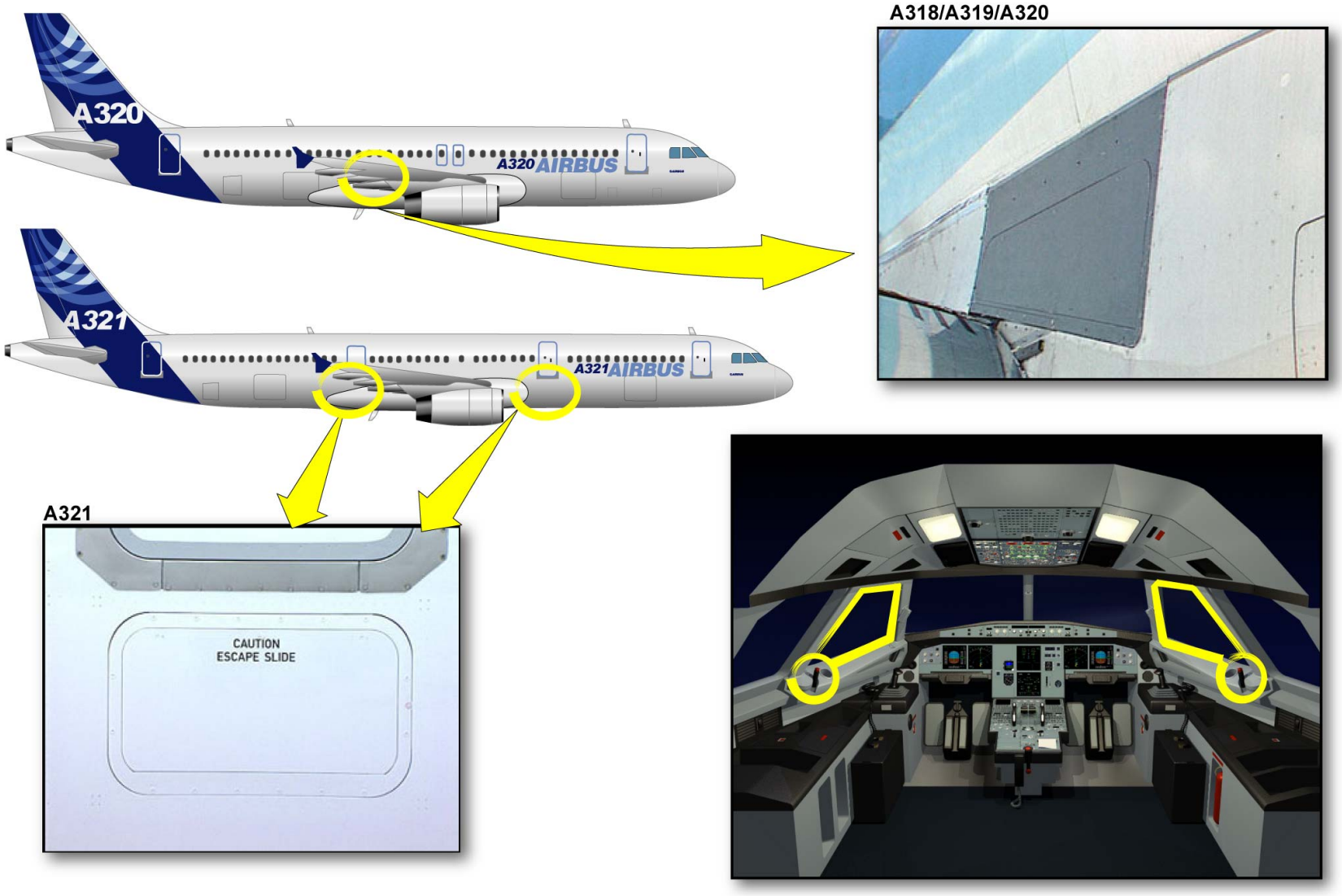
52 DOORS PRESENTATION (1)

EMERGENCY EXITS (continued)

ESCAPE SLIDE AND SLIDING WINDOWS

On the A318, A319 and A320, each overwing escape slide is stowed in a compartment at the wing root.
On the A321, an escape slide is packed in a container.
The slide is deployed automatically as soon as a door is opened in armed configuration.
The ECAM page indicates the emergency exit in the locked/unlocked position or condition and the escape slide in the armed/disarmed condition or position.
The two cockpit sliding windows provide emergency exit from the cockpit.

UGB13131 - U2AT4M0 - UM52PZ00000002



EMERGENCY EXITS - ESCAPE SLIDE AND SLIDING WINDOWS

52 DOORS PRESENTATION (1)

CARGO DOOR

The cargo compartment doors give access to the forward and aft cargo compartments. They open outwards and upwards from the fuselage.
They are manually locked and unlocked by a locking handle on the door.
The operation of the door is hydraulically powered by the yellow electric pump.
In case of electrical failure the door can be opened manually by using a hand pump.
The optional bulk cargo door installed for the A320 and A321 gives access to the bulk cargo compartment.
This door is manually operated and opens into the bulk cargo compartment.
The ECAM page indicates cargo doors in the closed/locked and unlocked condition or position.

UGB13131 - U2AT4M0 - UM52PZ00000002

FORWARD CARGO DOOR

OPTIONAL

BULK CARGO DOOR
A320/A321

AFT CARGO DOOR

FORWARD CARGO DOOR

A319/A320/A321

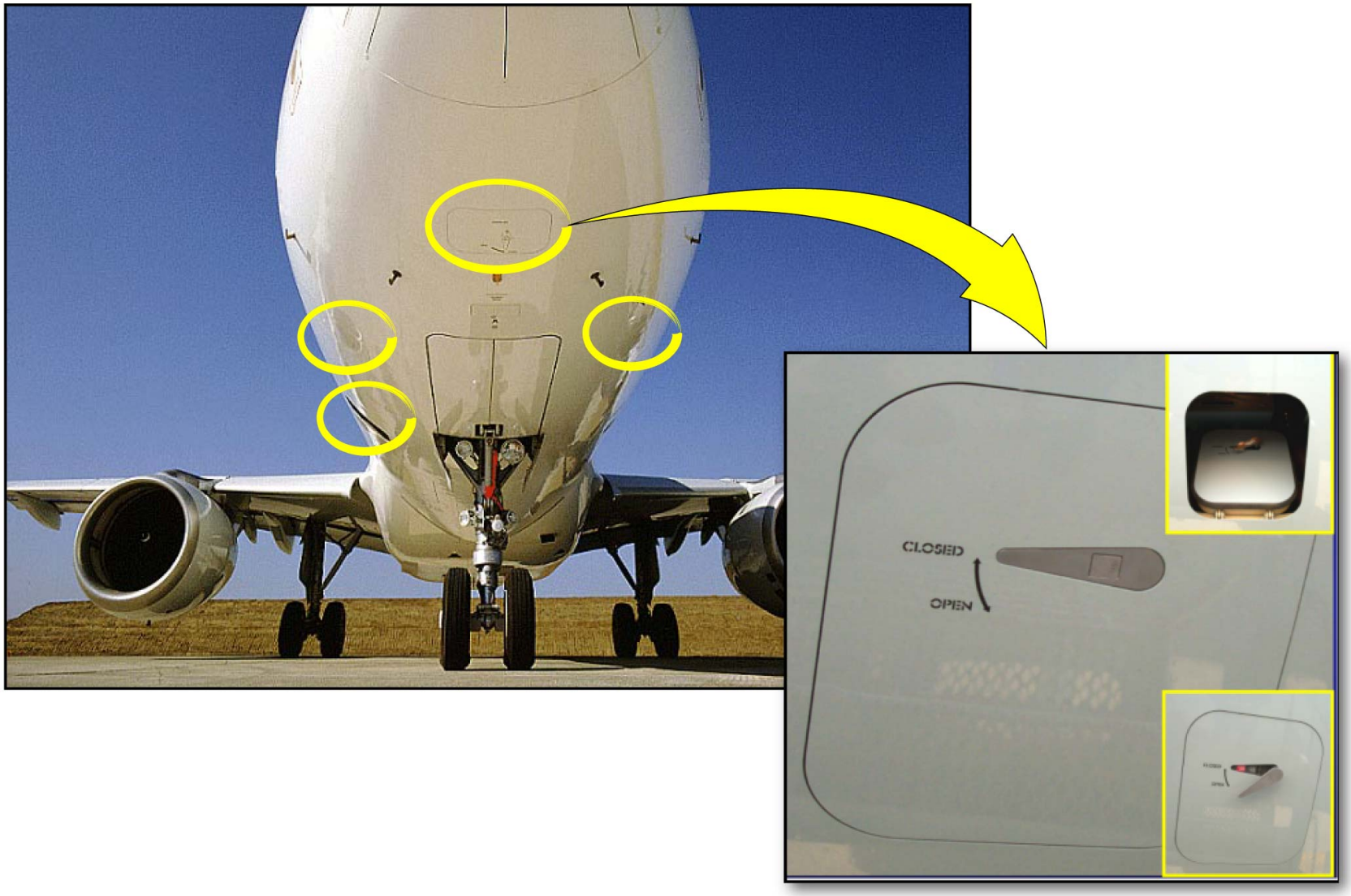
AFT CARGO DOOR
A318

CARGO DOOR

52 DOORS PRESENTATION (1)

AVIONICS COMPARTMENT DOORS

There are four avionics compartment doors in the lower fuselage around the nose landing gear bay.
These doors are manually operated and open inward.
The locking mechanism is identical on each door.
Each avionics compartment door is monitored by a proximity switch, which sends a signal to the ECAM system.



AVIONICS COMPARTMENT DOORS

52 DOORS PRESENTATION (1)

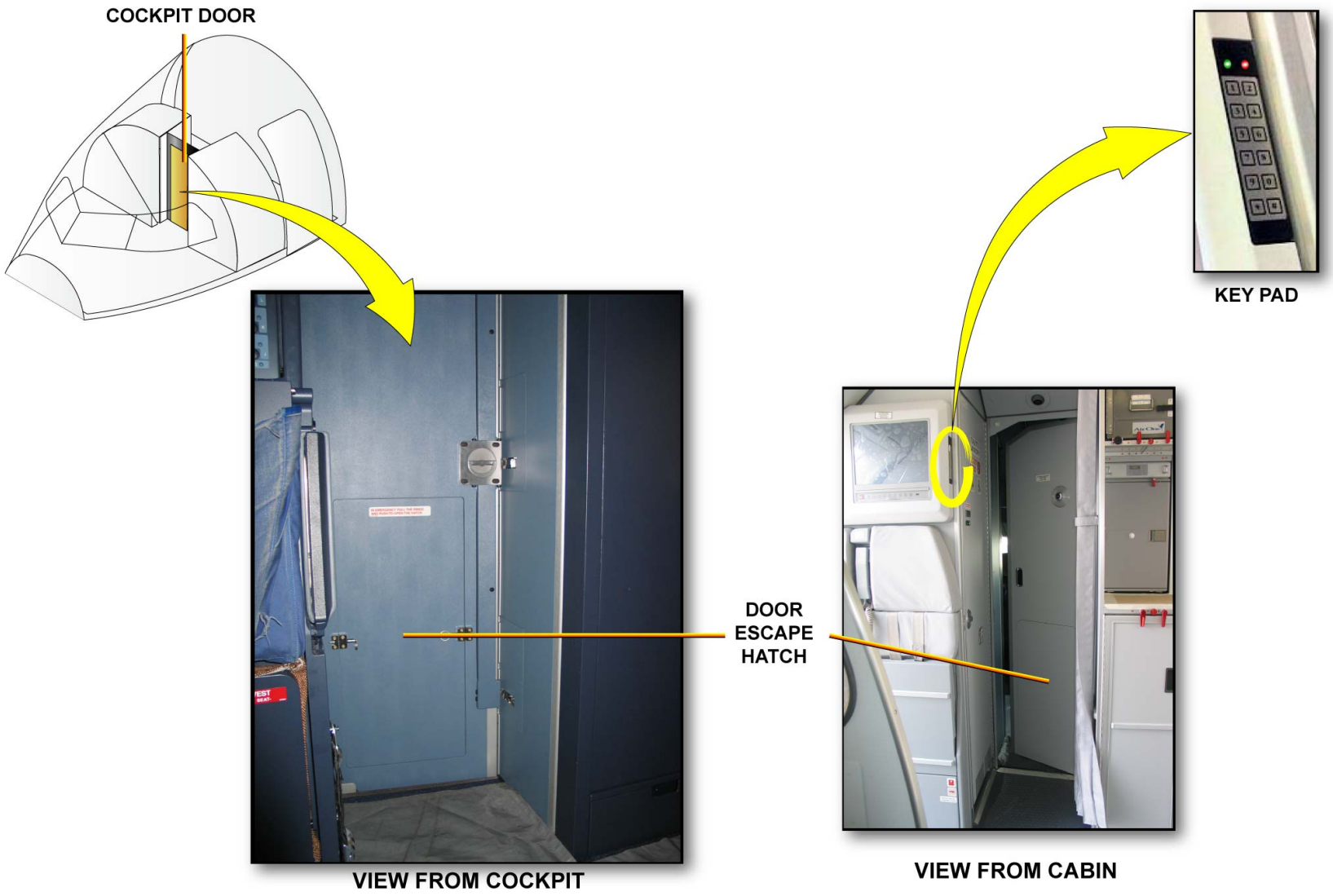
COCKPIT DOOR

The cockpit door separates the cockpit from the cabin.

GENERAL

It is an armored and bulletproof door made to prevent a hijacking attempt and protect the flight compartment against an intrusion.
A Cockpit Door Lock System (CDLS) controls its electrical release and prevents an unwanted access into the cockpit.
The door also has a door escape hatch, with two pip-pins which keep the hatch in position.

UGB13131 - U2AT4M0 - UM52PZ00000002



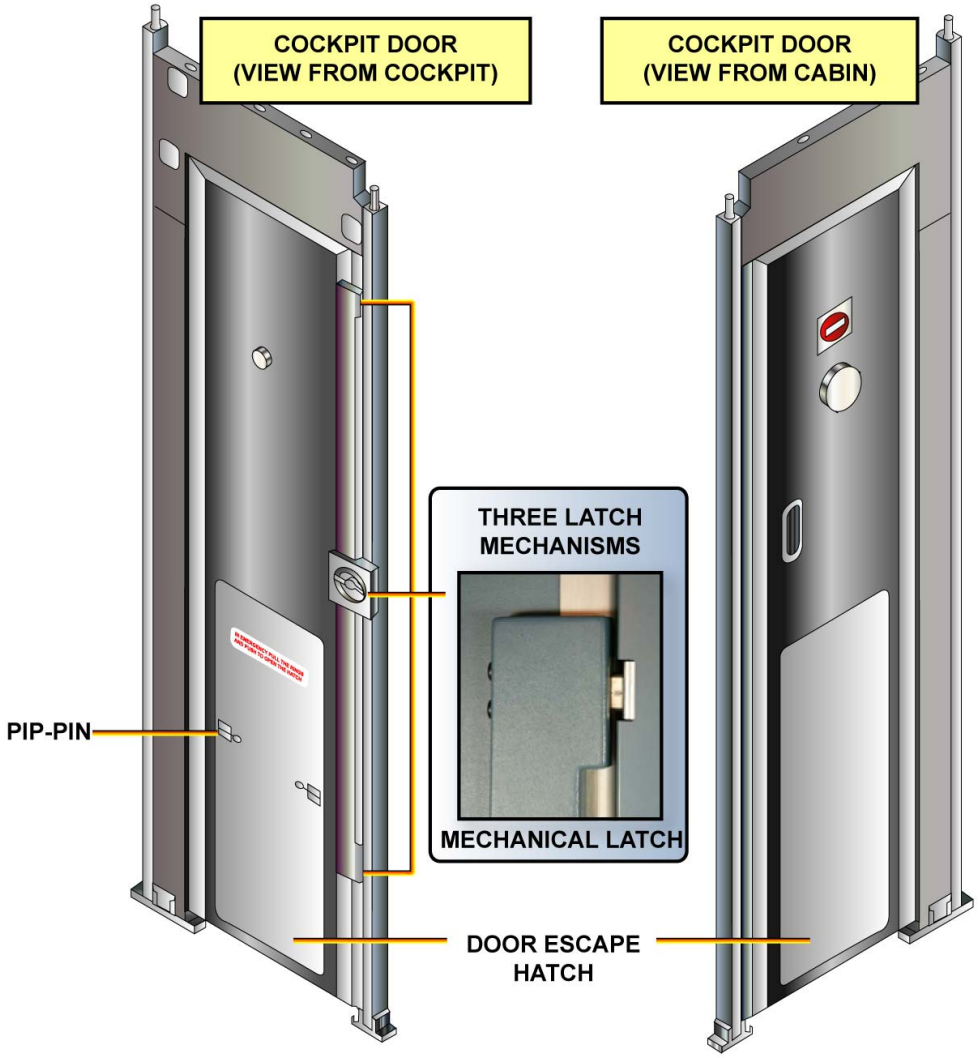
COCKPIT DOOR - GENERAL

52 DOORS PRESENTATION (1)

COCKPIT DOOR (continued)

DOOR ELEMENTS

The door has an escape hatch which has the same structure as the door. The hatch is manually operable only from the flight deck for pilot emergency exit in case of cockpit door jamming.
Three mechanical latches engage in electrical release strikes actuated by solenoids. The door is always locked when closed and the A/C is powered.
During maintenance activity there is a magnetic door stop to keep the door fully open.



COCKPIT DOOR - DOOR ELEMENTS

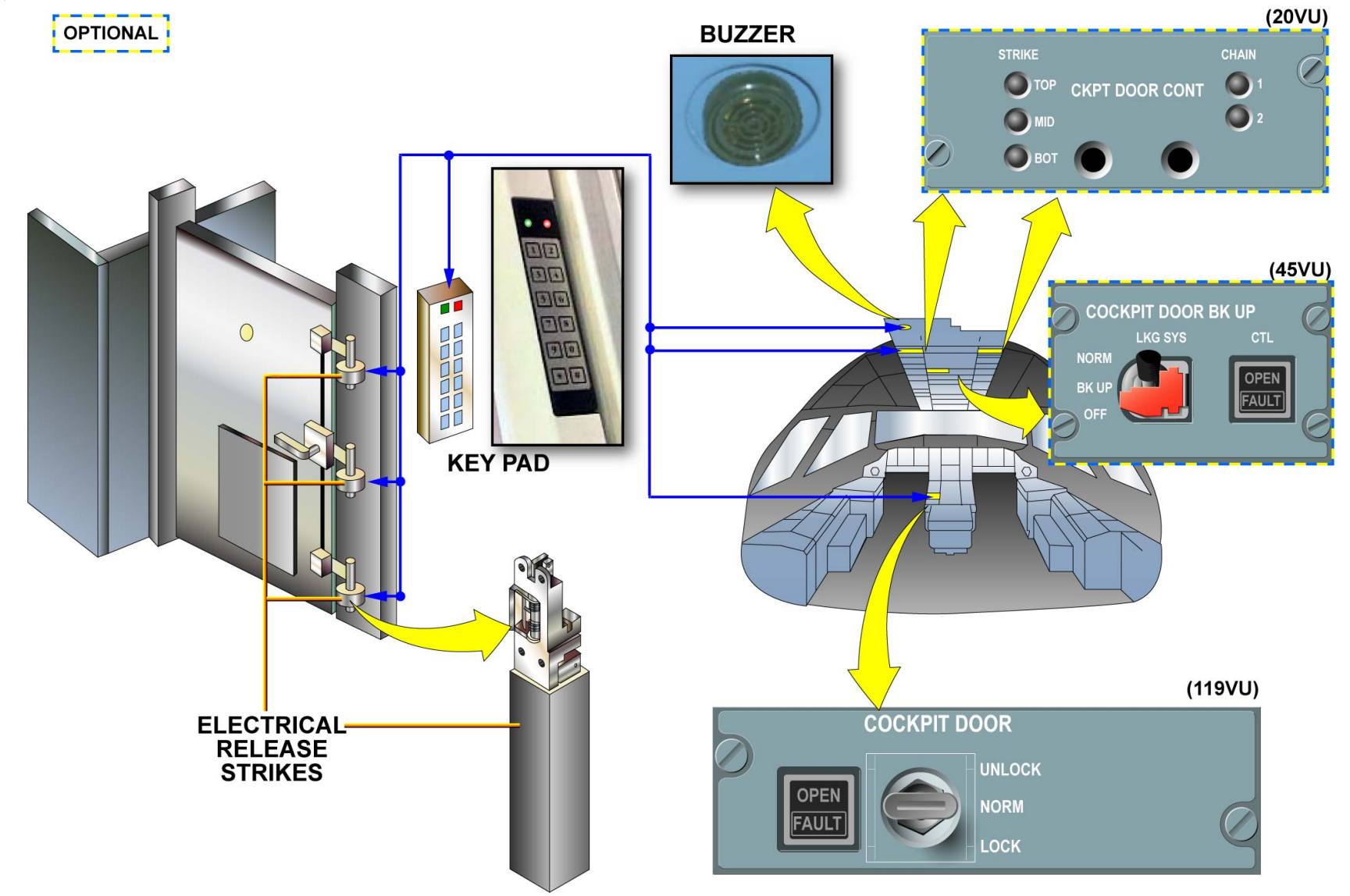
52 DOORS PRESENTATION (1)

COCKPIT DOOR (continued)

COCKPIT DOOR LOCK SYSTEM

The CDLS controls the locking and unlocking of the cockpit door. It also monitors the door locking and unlocking system for faults. The system has different parts:
- the control unit on the overhead panel with an integrated pressure sensor part for cockpit decompression detection and integrated maintenance lights,
- the cockpit door panel on the center pedestal with a toggle switch to control the cockpit door and a fault indicator,
- the buzzer on the overhead panel,
- the keypad in the cabin for cockpit access authorization,
- three electrical release strikes,
- an optional back-up system may be installed to override an inadvertent mal function of the CDLS. It has an additional control unit, and a back-up control panel with a back-up switch and a fault light.

UGB13131 - U2AT4M0 - UM52PZ00000002



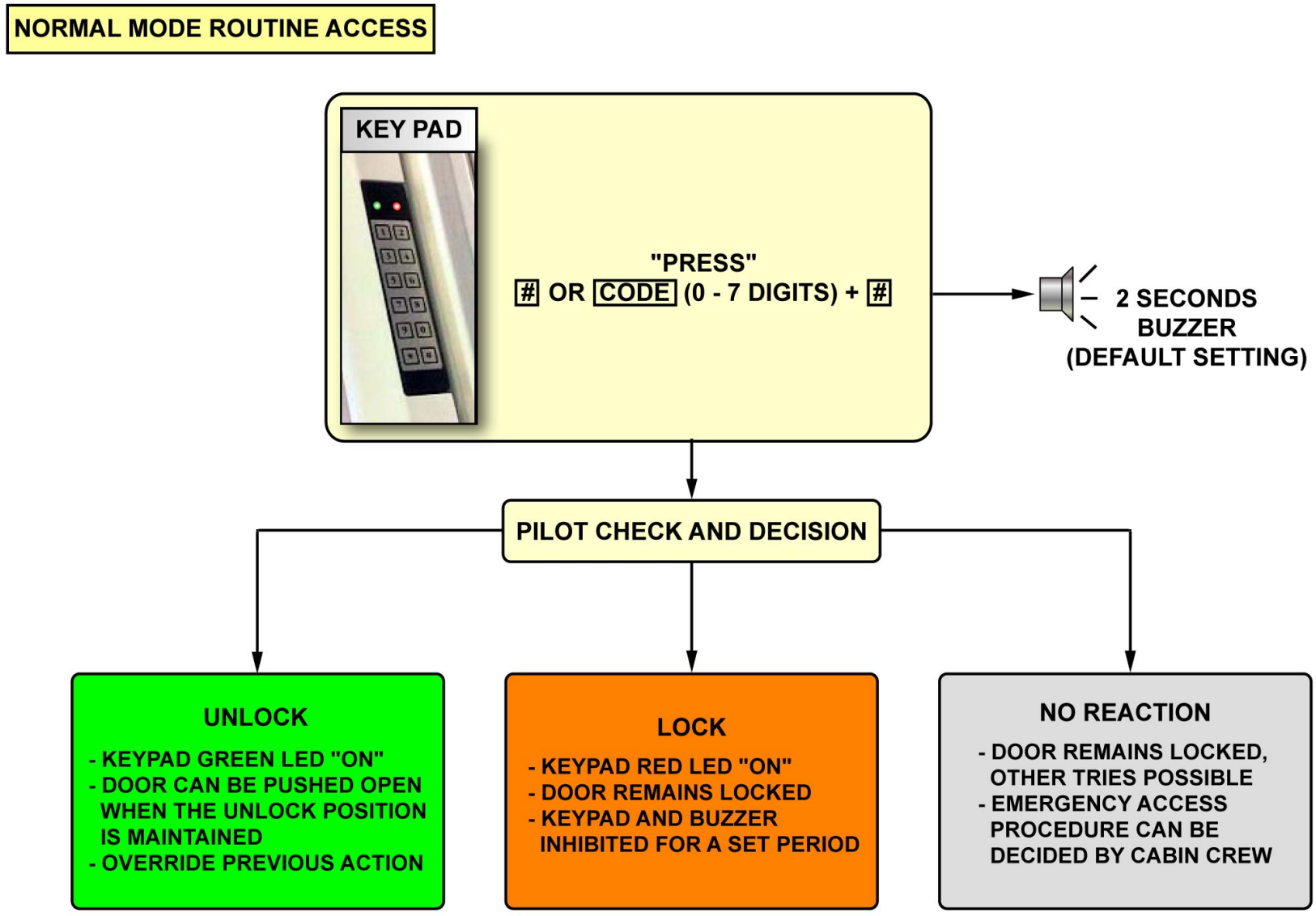
COCKPIT DOOR - COCKPIT DOOR LOCK SYSTEM

52 DOORS PRESENTATION (1)

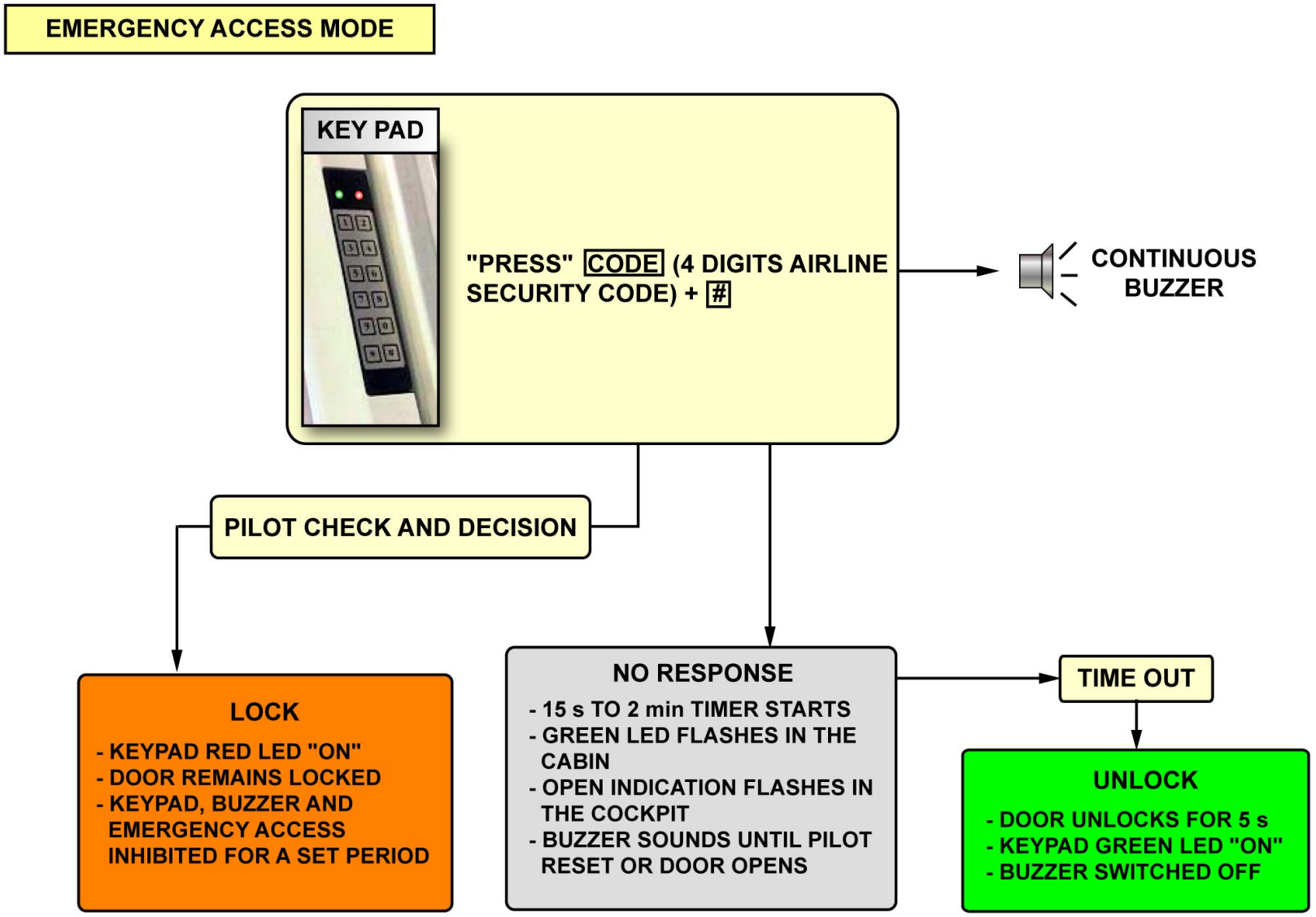
COCKPIT DOOR (continued)

OPERATING MODES

The CDLS has two access modes.
The first access mode is a Routine Access mode triggered by a single P/BSW from the cabin keypad (# key), to request entry in the cockpit via a buzzer.
The request can be allowed or denied via the P/BSW of the cockpit door panel on the center pedestal.
In case of no response, the cockpit door remains closed.
The second access mode is the Emergency Access mode activated by a four-digit code (plus the # key) entered on the keypad.
If the pilots deny the request, the keypad and the buzzer are inhibited for a defined time.
In case of no action from the pilots, the cockpit door unlocks after a preset time.


NORMAL MODE ROUTINE ACCESS
KEY PAD
"PRESS"
OR CODE (0 - 7 DIGITS) +
2 SECONDS
BUZZER
(DEFAULT SETTING)
PILOT CHECK AND DECISION
UNLOCK
- KEYPAD GREEN LED "ON"
- DOOR CAN BE PUSHED OPEN WHEN THE UNLOCK POSITION IS MAINTAINED
- OVERRIDE PREVIOUS ACTION
LOCK
- KEYPAD RED LED "ON"
- DOOR REMAINS LOCKED
- KEYPAD AND BUZZER INHIBITED FOR A SET PERIOD
NO REACTION
- DOOR REMAINS LOCKED, OTHER TRIES POSSIBLE
- EMERGENCY ACCESS PROCEDURE CAN BE DECIDED BY CABIN CREW

COCKPIT DOOR - OPERATING MODES


EMERGENCY ACCESS MODE
KEY PAD
"PRESS" CODE (4 DIGITS AIRLINE SECURITY CODE) + #
CONTINUOUS BUZZER
PILOT CHECK AND DECISION
LOCK
- KEYPAD RED LED "ON"
- DOOR REMAINS LOCKED
- KEYPAD, BUZZER AND EMERGENCY ACCESS INHIBITED FOR A SET PERIOD
NO RESPONSE
- 15 s TO 2 min TIMER STARTS
- GREEN LED FLASHES IN THE CABIN
- OPEN INDICATION FLASHES IN THE COCKPIT
- BUZZER SOUNDS UNTIL PILOT RESET OR DOOR OPENS
TIME OUT
UNLOCK
- DOOR UNLOCKS FOR 5 s
- KEYPAD GREEN LED "ON"
- BUZZER SWITCHED OFF

COCKPIT DOOR - OPERATING MODES

This Page Intentionally Left Blank

UGB13131 - U2AT4M0 - UM52PZ00000002

52 DOORS PRESENTATION (1)

CONTROL AND INDICATING

In this topic the door control and indication will be shown.

PASSENGER DOORS

The two different indicating systems are:
- a mechanical indicating system,
- an electrical indicating system.

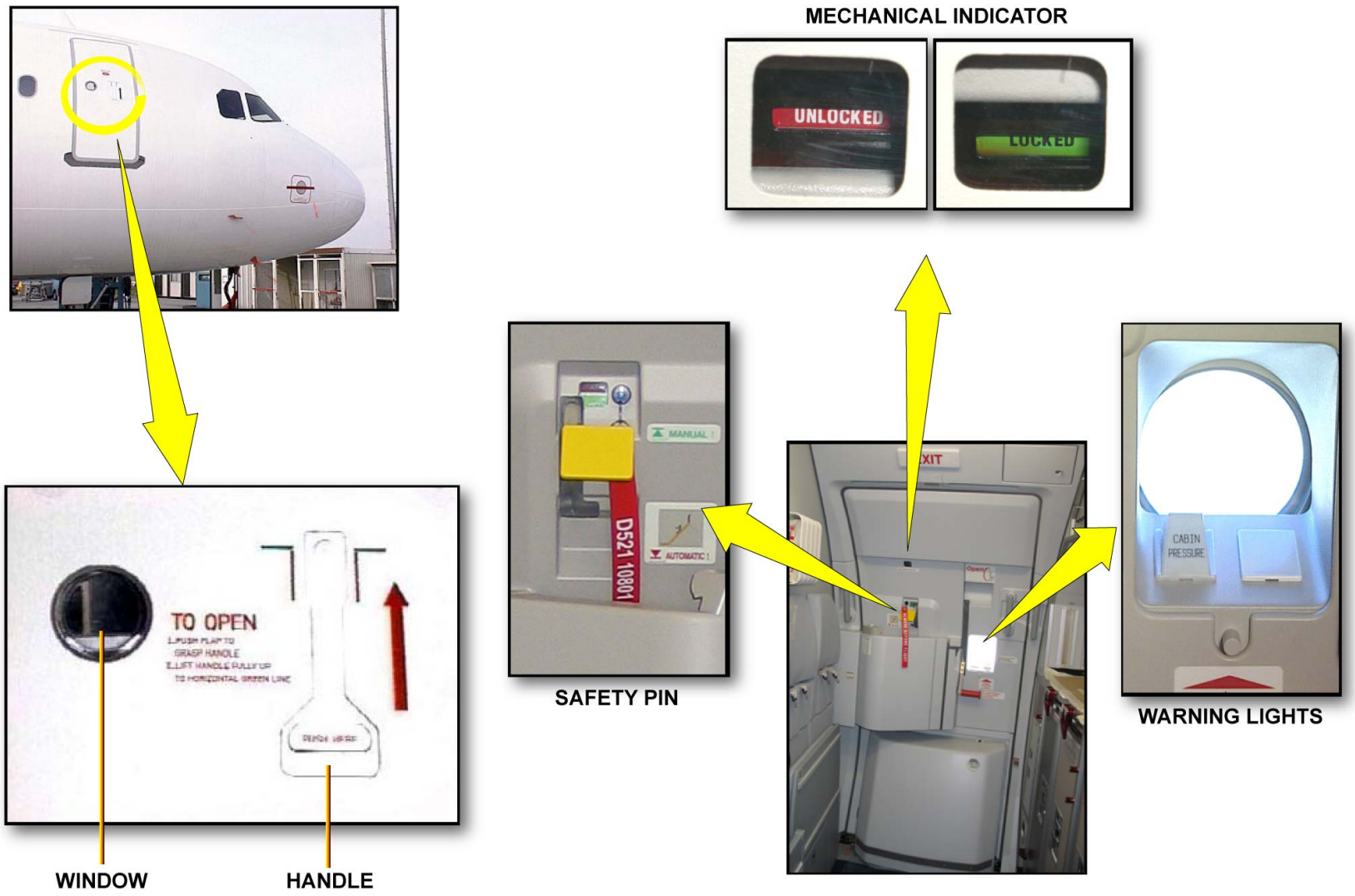
The mechanical indicating are:
- a visual indicator on the top of the door shows if the door is LOCKED or UNLOCKED,
- a visual indicator on the slide arming lever shows if the slide is ARMED or DISARMED.

The electrical indicating is:
- two warning lights,

they are visible from the inside and the outside.
When a person tries to open the door the white SLIDE ARMED light indicates that the escape slide is in the ARMED mode.
The red CABIN PRESSURE light flashes when there is a residual pressure in the cabin with the slide disarmed.

WARNING: Do not open a door when the aircraft is pressurized. This will cause explosive decompression, and kill or cause injury to persons and material.

NOTE: Note: The A321 emergency exit doors have the same control indicating as the passenger doors.



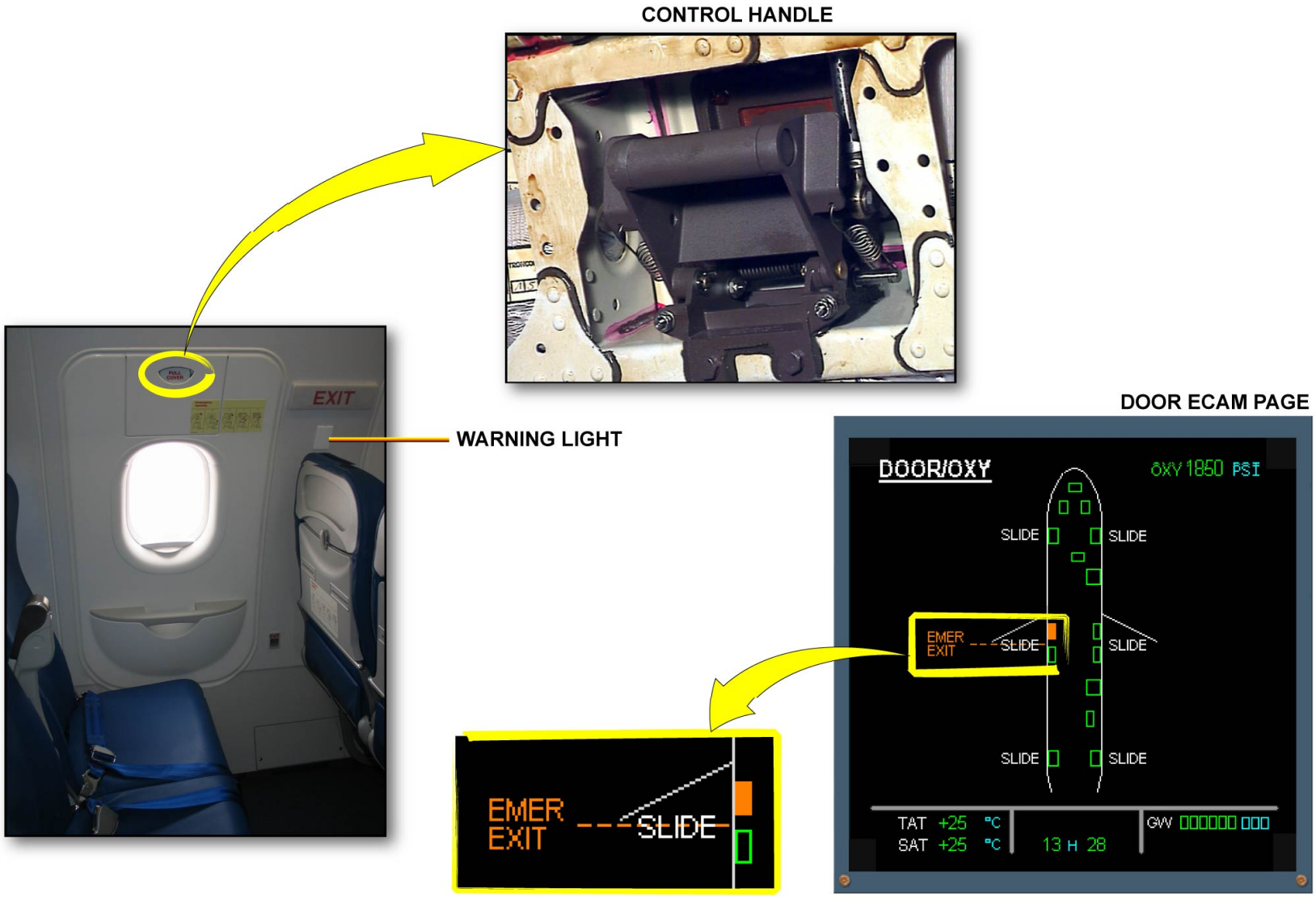
CONTROL AND INDICATING - PASSENGER DOORS

52 DOORS PRESENTATION (1)

CONTROL AND INDICATING (continued)

EMERGENCY EXITS

Accidental opening of the cover flap for access to the inner control handle will automatically activate the white indication light beside the exit.
The ARMED/DISARMED condition of the exit is indicated on the ECAM DOOR/OXY Page (DISARMED position only for maintenance work).



CONTROL AND INDICATING - EMERGENCY EXITS

52 DOORS PRESENTATION (1)

CONTROL AND INDICATING (continued)

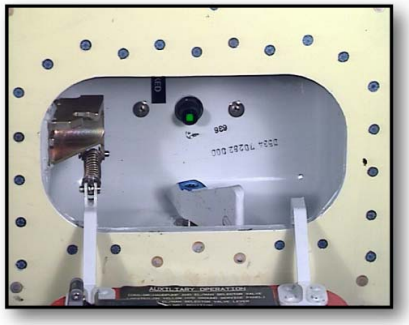
CARGO DOORS

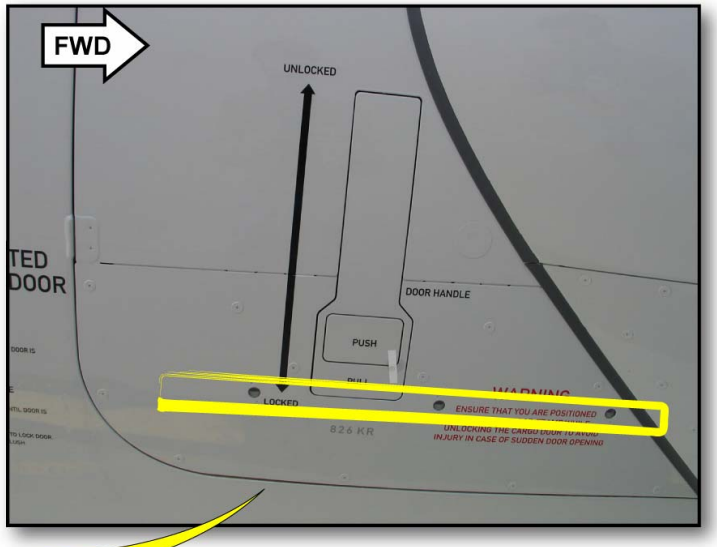
There are two different indicating systems:
- a mechanical indicating system,
- an electrical indicating system.

In the access panel at the bottom of the door, there are indication windows to check if the door is correctly locked:
- red marks: door not correctly locked,
- green marks: door correctly locked.

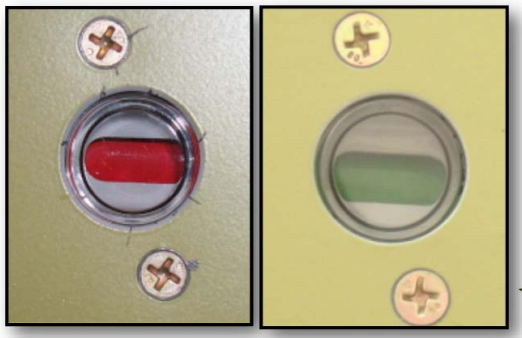
When the door is fully open and locked, a green indicator light comes on, on the cargo door control panel.

DOOR ECAM PAGE


CONTROL PANEL



FWD CARGO DOOR


MECHANICAL INDICATOR

CONTROL AND INDICATING - CARGO DOORS

52 DOORS PRESENTATION (1)

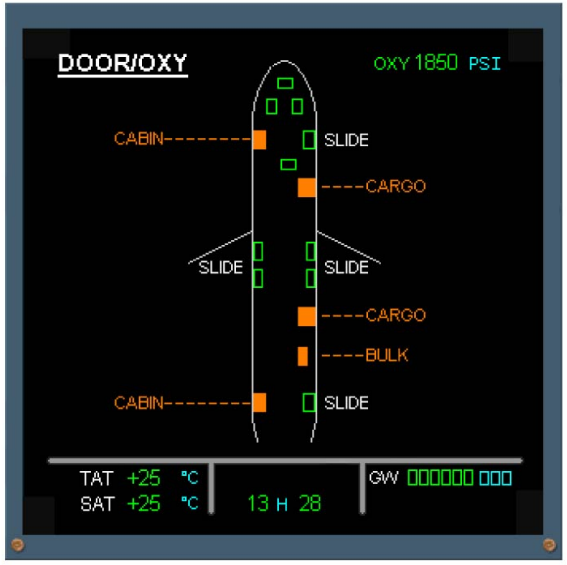
CONTROL AND INDICATING (continued)

ECAM DOOR/OXY PAGE

The ECAM page - DOOR/OXY monitors the status of all the doors and the escape slide/slide raft.
The indications on the ECAM page are:
- green when the door is closed and locked,
- amber when the door is unlocked.

The white SLIDE indications on the ECAM DOOR page means that the slides are armed.
When the slide is disarmed on any door no indication is displayed.

A318/A319



A320

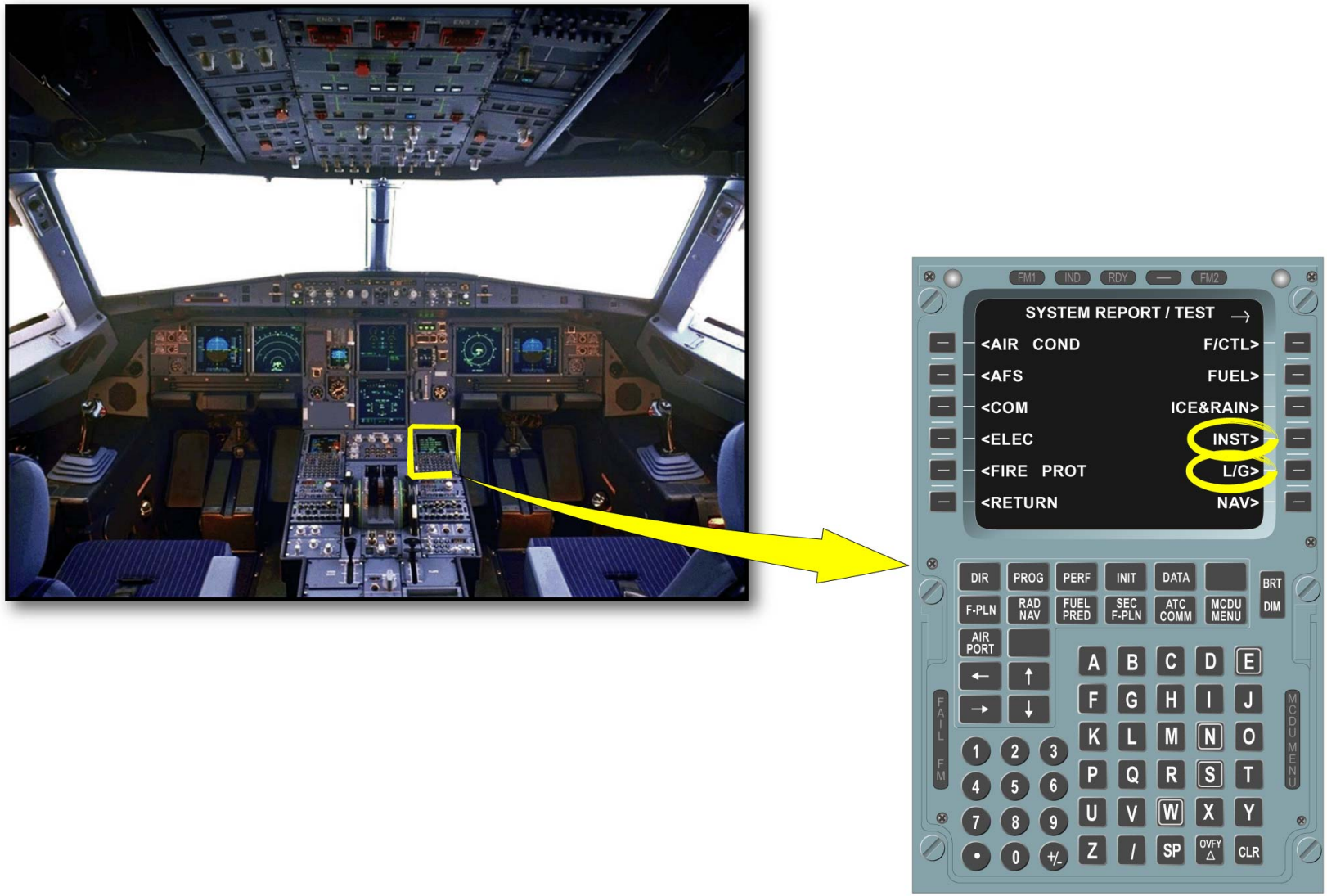
A321

CONTROL AND INDICATING - ECAM DOOR/OXY PAGE

52 DOORS PRESENTATION (1)

MAINTENANCE/TEST FACILITIES

The MCDU is used to trouble shoot the monitored components through the INST and L/G keys. The proximity sensors, which monitor the status of the doors, are connected to the ECAM system or Landing Gear Control Interface Units (LGCIUs).



MAINTENANCE/TEST FACILITIES

52 DOORS PRESENTATION (1)

SAFETY PRECAUTIONS

When you work on the aircraft, make sure that you obey all the AMM safety procedures. This will prevent injury to personnel and/or damage to the aircraft. Here is an overview of main safety precautions about the door system.

Be careful before opening a cabin door. Make sure that the red warning light does not flash. If it flashes, it means a residual pressure remains in the cabin. When you open in this configuration a door it could kill or cause serious injury to persons and cause damage to the aircraft.

Make sure that when you work on a cabin door the emergency control handle is in the disarmed position with the safety pin installed. Check that the percussion lever of the door damper and emergency operation cylinder is in disarmed position with the safety pin installed.

Install a safety barrier or an access platform before opening any cabin door. When opening or closing a cargo door, make sure that the access platform is at the correct height.

When the wind speed is expected to exceed 40 knots do not open the forward or aft cargo door and if open close the doors immediately.

Stay beside the cargo door during opening or closing. Use protective clothes Use solvents/cleaning agents, sealants and other special materials only with a good flow of air through the work area. Put on protective clothing, rubber gloves, goggles and mask. Obey the manufacture's instructions when you use these materials.

UGB13131 - U2AT4M0 - UM52PZ00000002

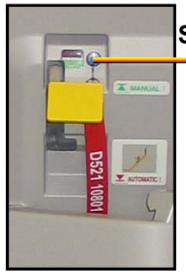
CAUTION DOORS OPENING OR CLOSING ACCORDING TO MAXIMUM WIND SPEED.

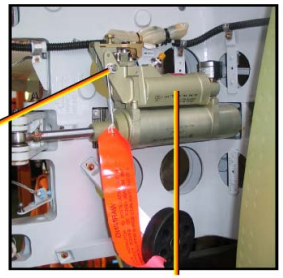
CAUTION SLIDE ARMING LEVER DISARMED WITH SAFETY PIN.

CAUTION DAMPER AND EMERGENCY CYLINDER DISARMED WITH SAFETY PIN.

CAUTION SAFETY BARRIER OR ACCESS PLATFORM INSTALLED.

CAUTION CARGO DOOR ACCESS PLATFORM AT CORRECT HEIGHT.





SAFETY BARRIER

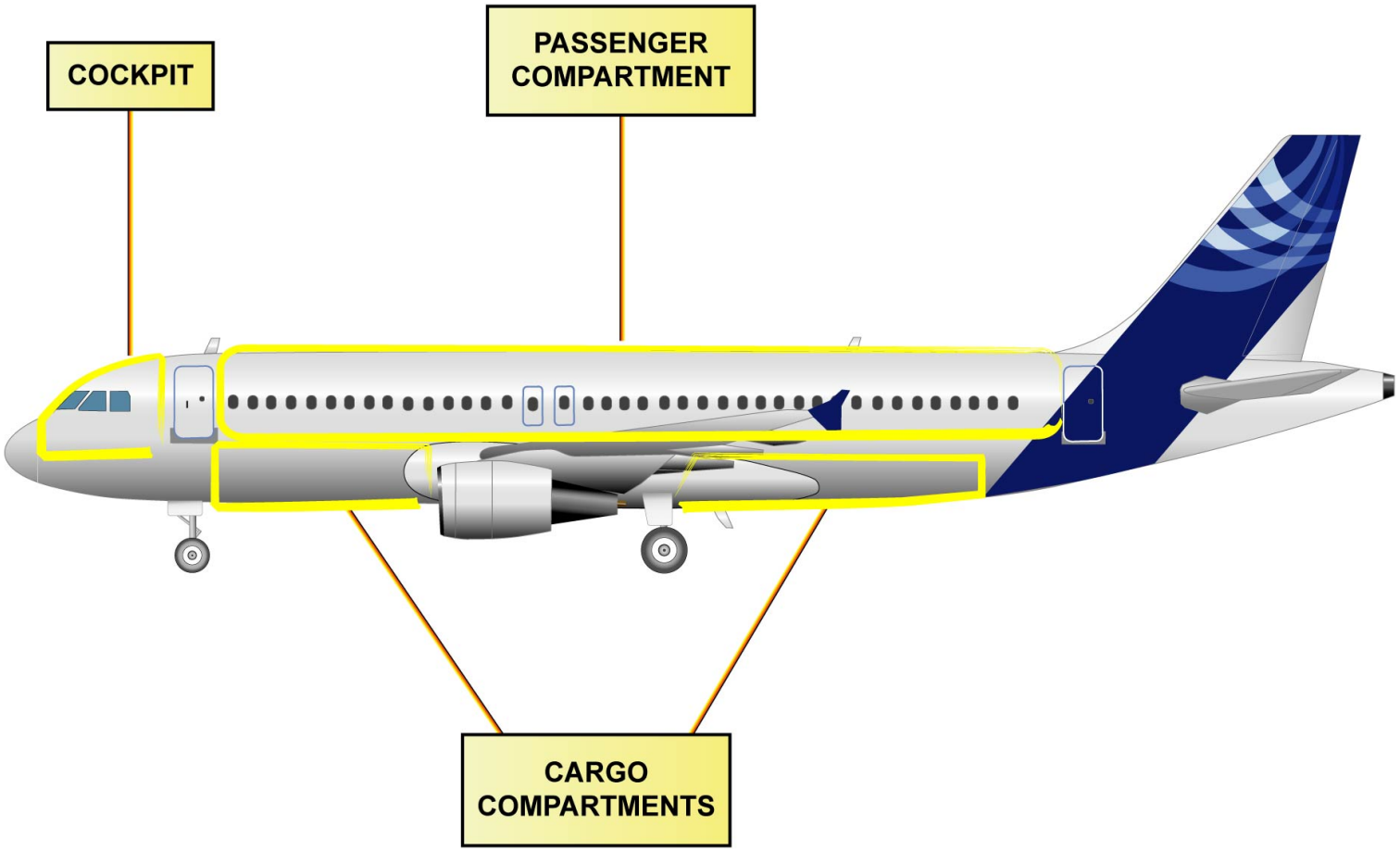
ACCESS PLATFORM

SAFETY PRECAUTIONS

25 EQUIPMENT/FURNISHINGS PRESENTATION (1)

GENERAL

The equipment and furnishings are installed in different compartments:
- The cockpit,
- The passenger compartment,
- The cargo compartments.

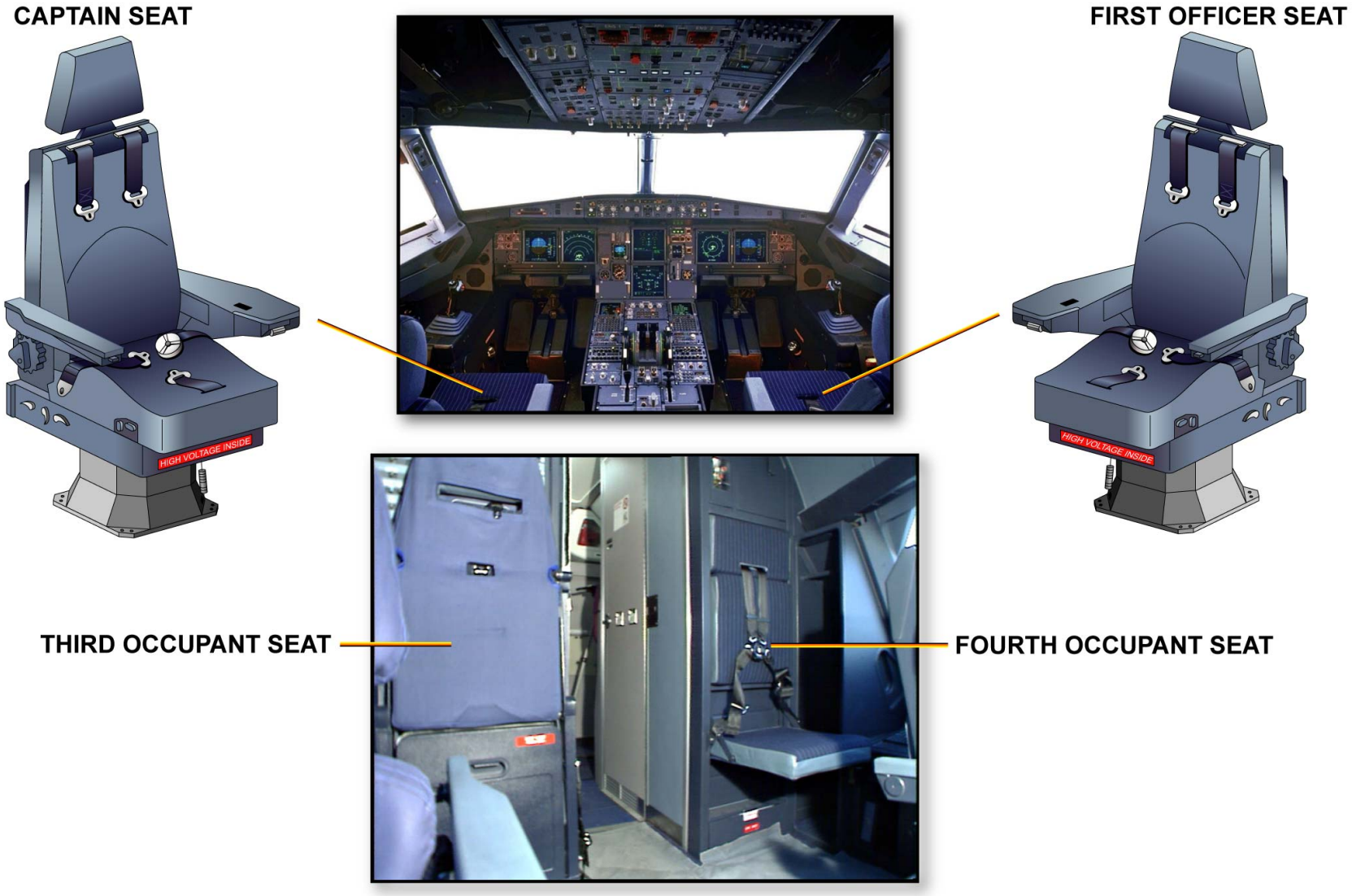


GENERAL

25 EQUIPMENT/FURNISHINGS PRESENTATION (1)

COCKPIT SEATS

The CAPT and F/O seats are symmetrical and their operation identical.
They are electrically or manually operated.
They are not interchangeable.
The seats are secured onto the cockpit floor.
The Third Occupant seat is a folding seat attached to the right rear panel in the cockpit.
Position adjustment is only possible in lateral direction.
The Fourth Occupant seat is a folding seat installed against the left rear partition in the cockpit.
This seat is optionally installed and is not adjustable.



COCKPIT SEATS

25 EQUIPMENT/FURNISHINGS PRESENTATION (1)

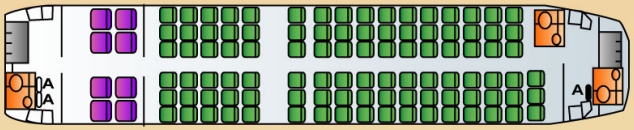
CABIN LAYOUTS

Here are shown the typical cabin layouts.

UGB13131 - U2AT4M0 - UM25PZ00000002

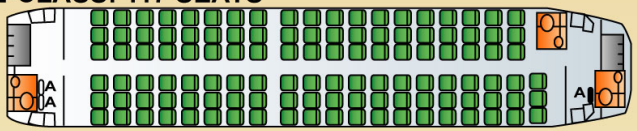
A318 STANDARD CABIN LAYOUTS

TWO-CLASS: 107 SEATS



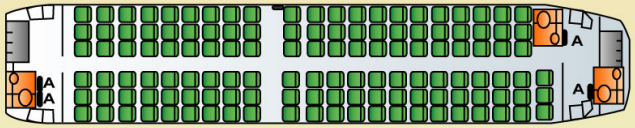
8F AT 38IN + 99Y AT 32IN PITCH

SINGLE-CLASS: 117 SEATS



117Y AT 32IN PITCH

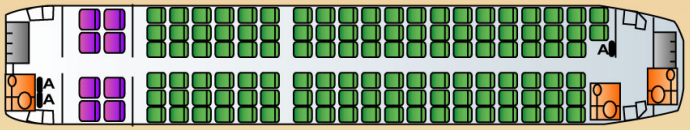
SINGLE-CLASS, HIGH-DENSITY: 129 SEATS



129Y AT 29/30IN PITCH

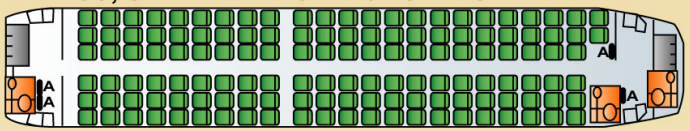
A319 STANDARD CABIN LAYOUTS

TWO-CLASS: 124 SEATS



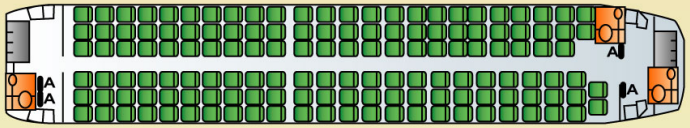
8F AT 36IN + 116Y AT 32IN PITCH

SINGLE-CLASS, SPECIFICATION: 134 SEATS



134Y AT 32IN PITCH

SINGLE-CLASS, HIGH-DENSITY: 145 SEATS

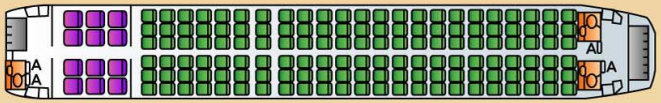


145Y AT 29/30IN PITCH

CABIN LAYOUTS

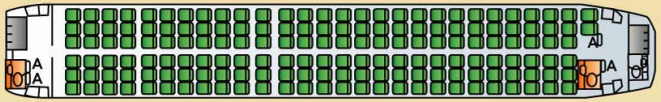
A320 STANDARD CABIN LAYOUTS

TWO-CLASS: 150 SEATS



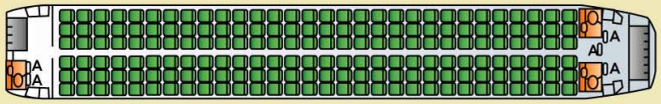
12F AT 38IN + 138Y AT 31/32IN PITCH

SINGLE-CLASS, SPECIFICATION: 164 SEATS



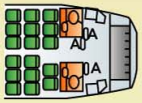
164Y AT 31/32IN PITCH

SINGLE-CLASS, HIGH-DENSITY: 180 (JAA) 179 (FAA) SEATS



JAA

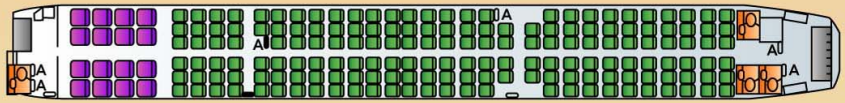
180/179Y AT 28/29IN PITCH



FAA

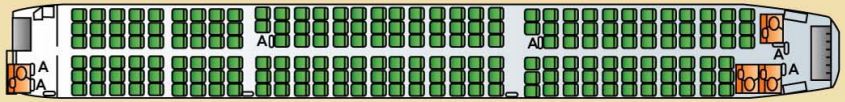
A321 STANDARD CABIN LAYOUTS

TWO-CLASS: 185 SEATS



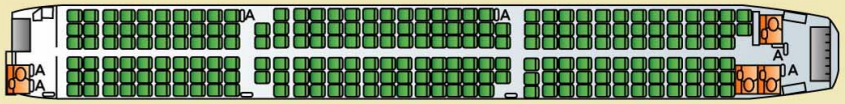
16F AT 36IN + 169Y AT 31/32IN PITCH

SINGLE-CLASS, SPECIFICATION: 199 SEATS



199Y AT 32IN PITCH

SINGLE-CLASS, HIGH-DENSITY: 220 SEATS



220Y AT 28/29IN PITCH

CABIN LAYOUTS

This Page Intentionally Left Blank

25 EQUIPMENT/FURNISHINGS PRESENTATION (1)

PASSENGER SEATS

The passenger seats are mounted on standard tracks, which allow quick removal and installation.

CABIN ATTENDANT SEATS

Cabin attendant seats are attached to partitions or lavatory walls.
Depending on the cabin configuration, the number and position of cabin attendant seats can vary.
All are folding seats.

PASSENGER SEATS

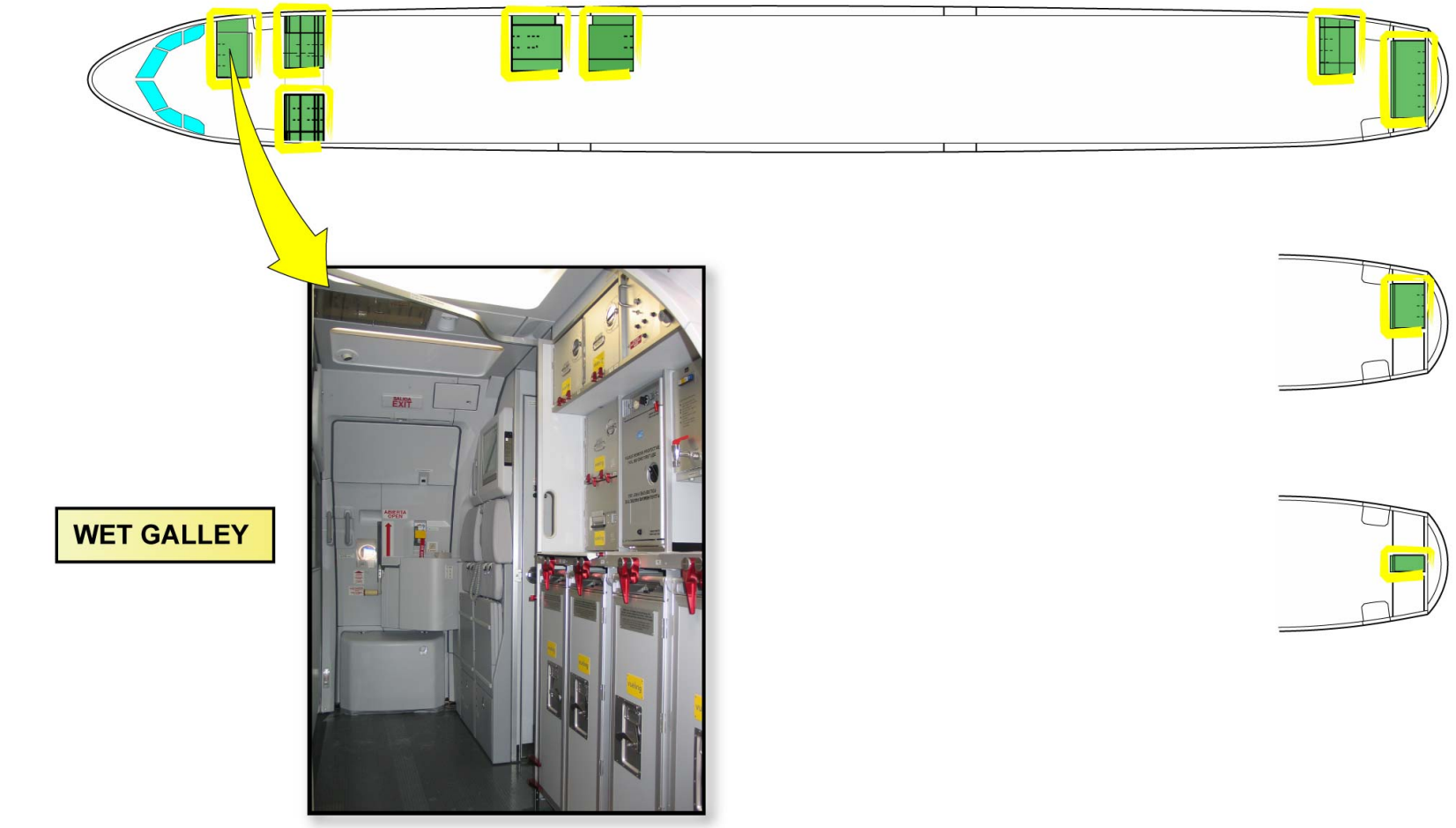
CABIN ATTENDANT SEATS

PASSENGER SEATS & CABIN ATTENDANT SEATS

25 EQUIPMENT/FURNISHINGS PRESENTATION (1)

GALLEYS

There are two types of galley locations, fixed and flexible. The fixed galleys are at forward and after passenger/crew/service doors. Flexible galley locations in forward emergency exit door area (only A321).
The number and position of the galleys vary with the cabin configuration and the aircraft utilization.
There are dry galleys and wet galleys installed.

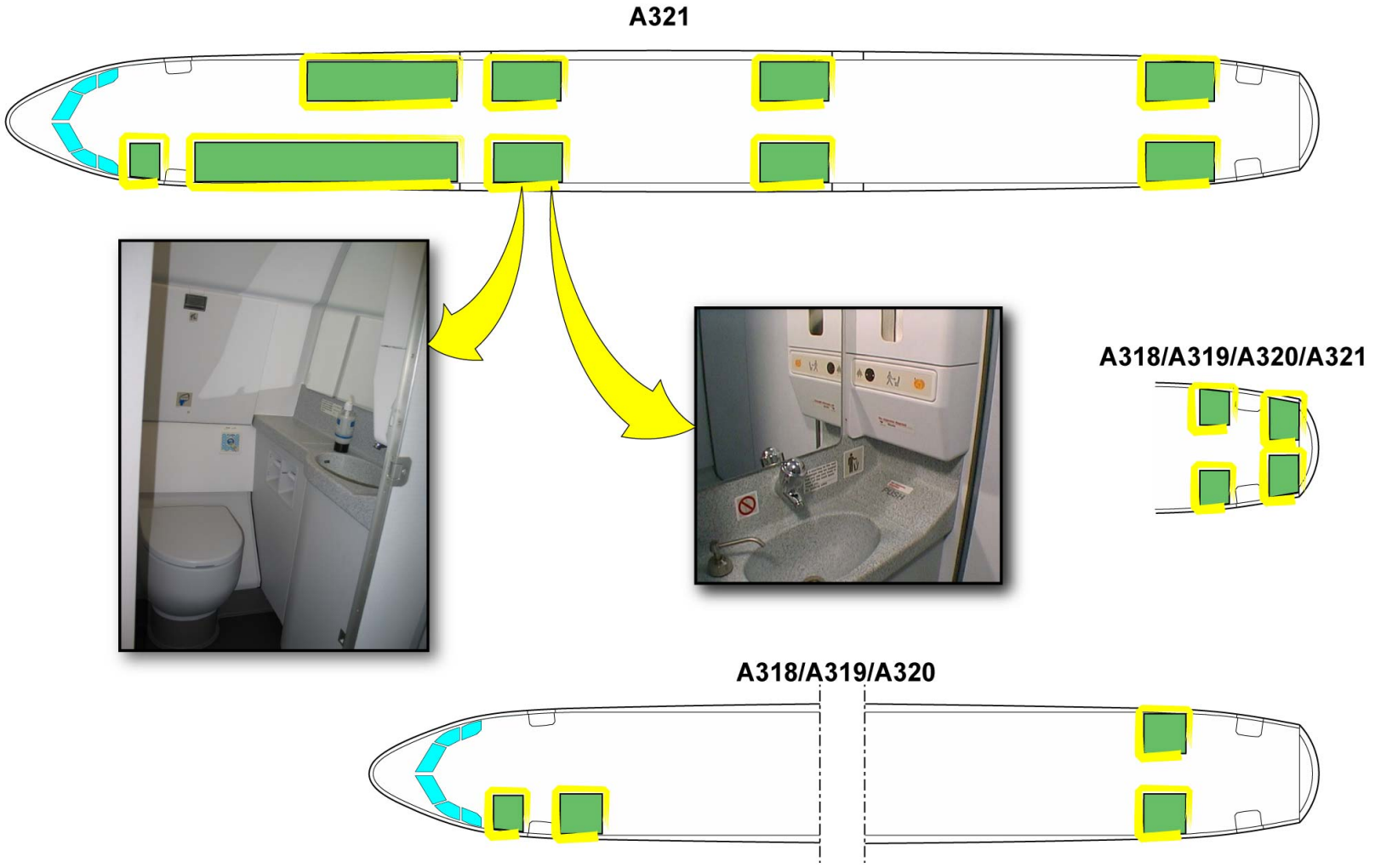


GALLEYS

25 EQUIPMENT/FURNISHINGS PRESENTATION (1)

LAVATORIES

The number and position of the lavatories change with the cabin configuration.
Lavatories are available on fixed positions and flexible lavatories units are installed in assigned flexibility areas.

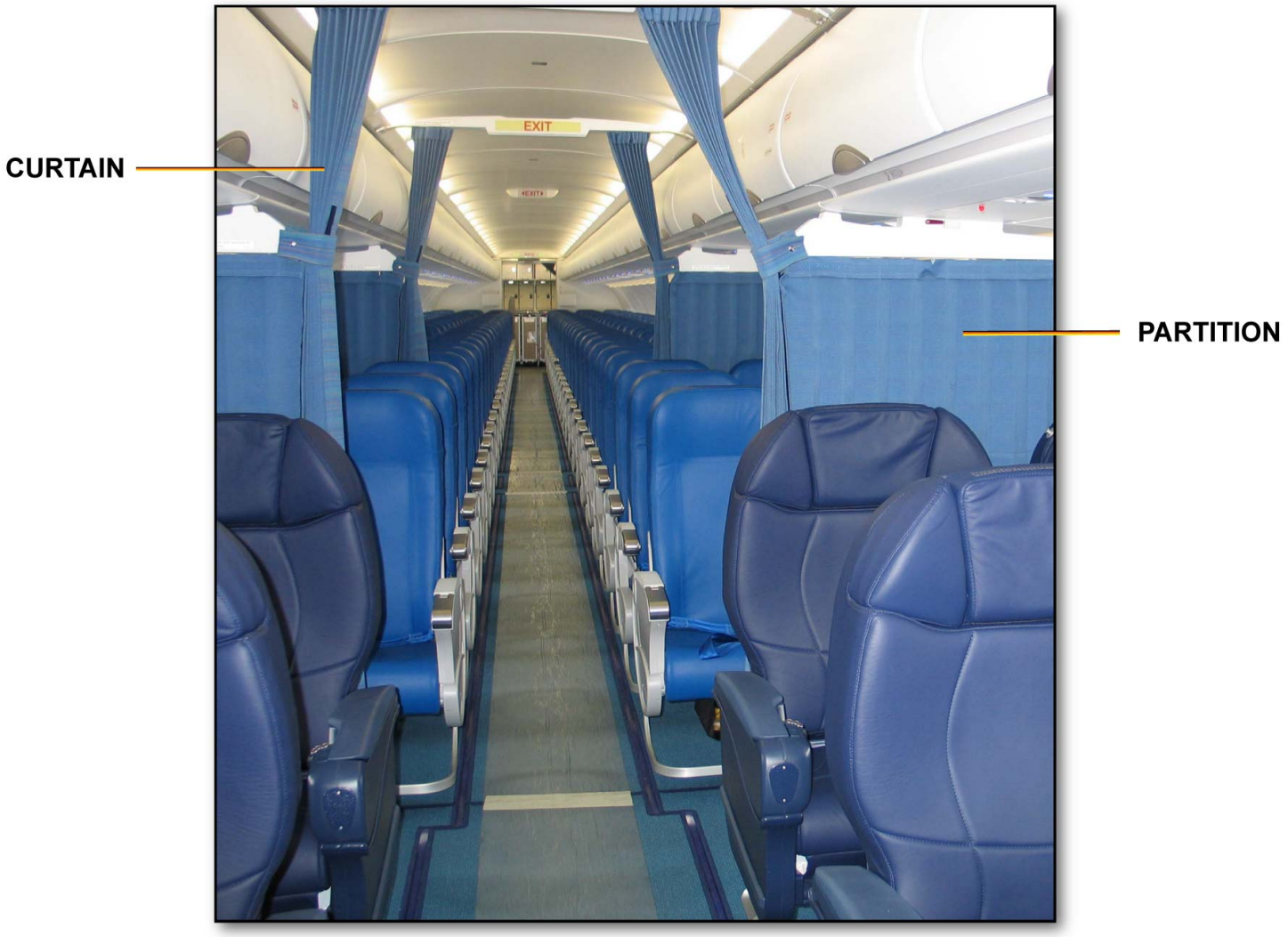


LAVATORIES

25 EQUIPMENT/FURNISHINGS PRESENTATION (1)

CURTAINS AND PARTITIONS

Classes and zones are divided with floor mounted partitions and ceiling mounted curtains.



CURTAINS AND PARTITIONS

25 EQUIPMENT/FURNISHINGS PRESENTATION (1)

CABIN PANEL LAYOUT

The cabin interior has removable panels. The lining design customizes the cabin interior.

LOWER SIDE WALL PANELS

The lower side wall panels are mounted between the cabin floor and the upper side wall panels.
They provide the rapid decompression function.

UPPER SIDE WALL PANELS

The upper side wall panels are mounted on the side of the cabin. They include the window contour.
Inner window panels and sun visors are installed onto the upper side wall panel.

COVE LIGHT PANELS

The cove light panels cover the space between the upper side wall panels and the overhead stowage compartments.
The cove light panels are removable to enable cabin light replacement.

OVERHEAD STOWAGE COMPARTMENT

The overhead stowage compartments are installed above the cabin seat rows.
They extend from the first seat row to the last seat row on the left and right hand side of the cabin.
The overhead stowage compartments are of different sizes and are arranged to fit the cabin layout.

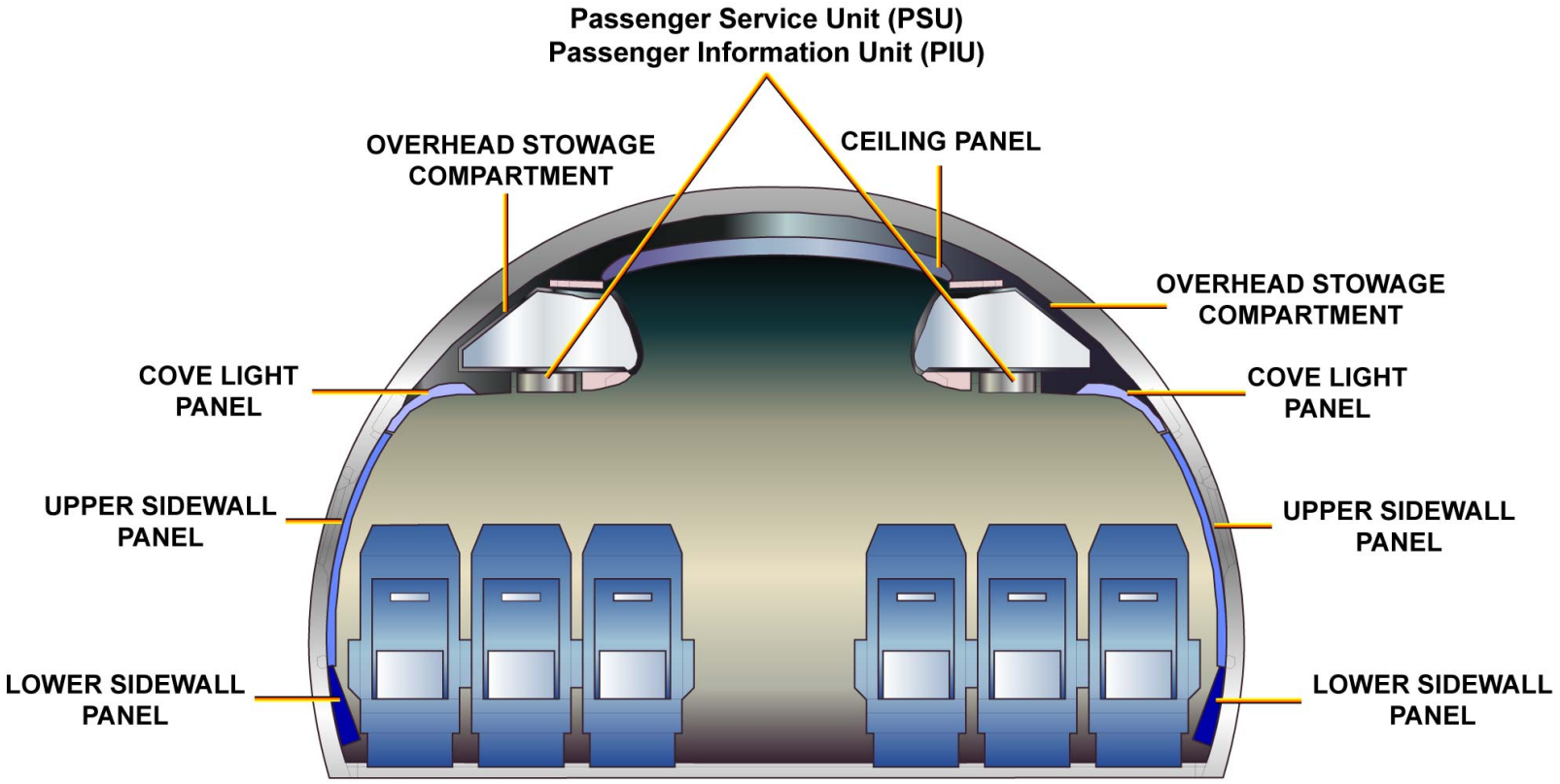
CEILING PANELS

Removable ceiling panels are mounted in the cabin.
They are installed over the full length of the cabin and the utility areas.

PSU/PIU

The passenger service information units comprise the Passenger Service Units (PSUs) and Passenger Information Units (PIUs).
They are installed in the service channel, above the seat row.
The PSUs and PIUs have different lengths to fit with the aircraft furnishing configuration.
These units are:
- Information panel,
- Attendant call panel,
- Emergency oxygen mask and generator container,
- Reading light panel,
- Individual air outlet panel.

UGB13131 - U2AT4M0 - UM25PZ00000002

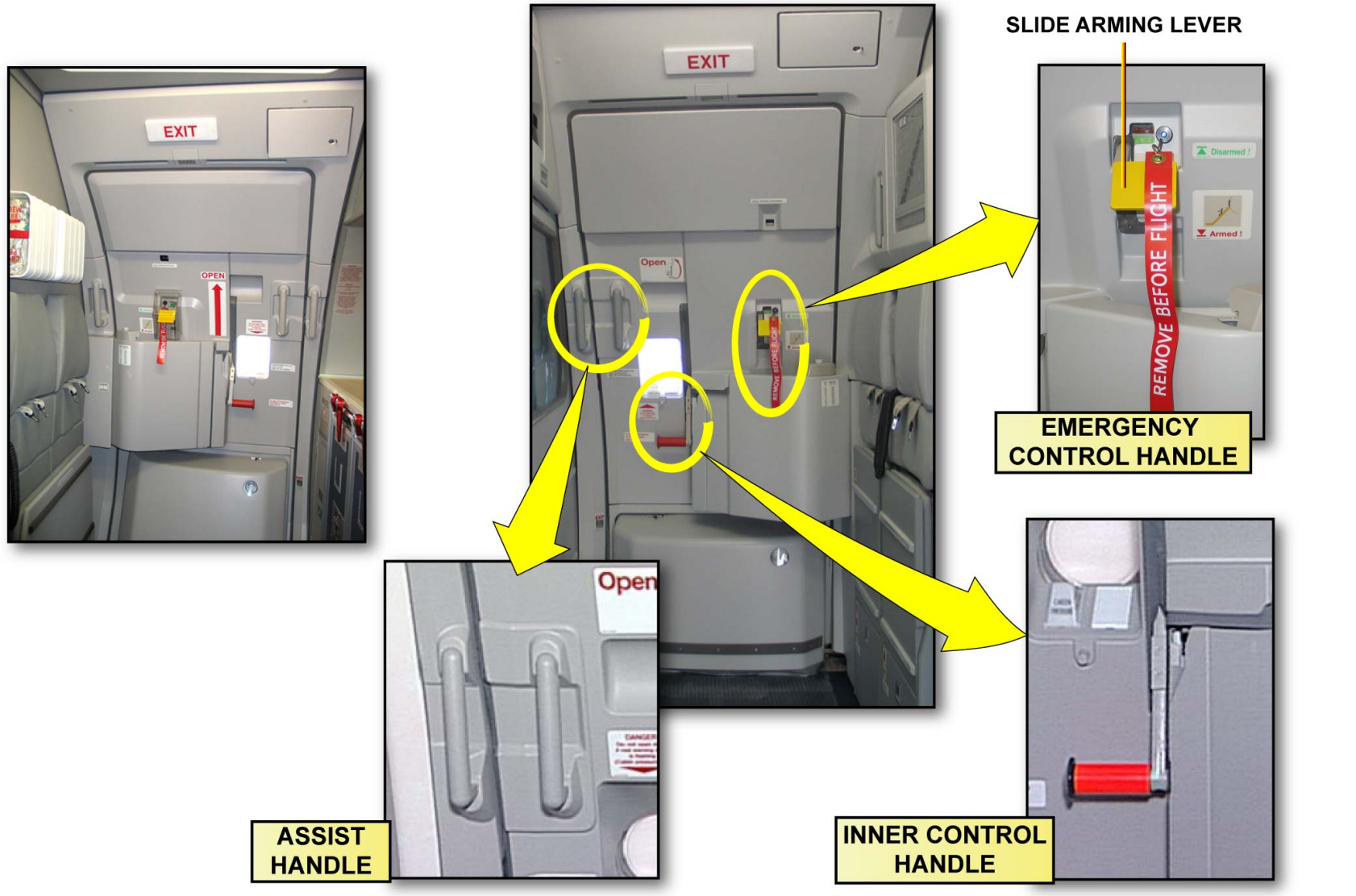


CABIN PANEL LAYOUT - LOWER SIDE WALL PANELS ... PSU/PIU

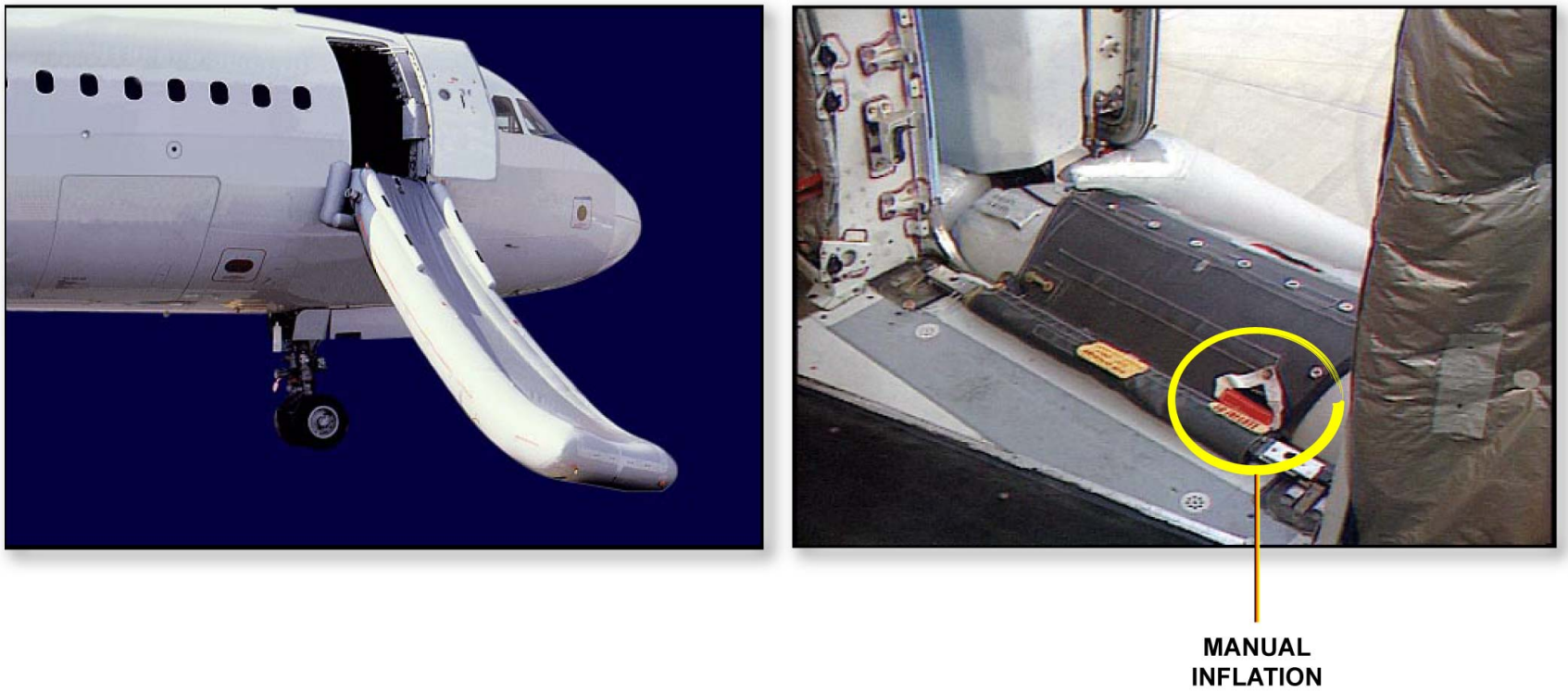
25 EQUIPMENT/FURNISHINGS PRESENTATION (1)

PASSENGER DOOR AND ESCAPE SLIDE

The aircraft has two forward and two aft passenger doors.
Three assist handles enhance safety during door operation.
The two forward and the two aft cabin doors have either a single lane escape slide (as shown on the picture) or a slide raft.
The inflation and deployment is automatically done when the cabin door is opened in the armed mode. If the escape slide does not inflate automatically, the red manual inflation handle must be pulled.



PASSENGER DOOR AND ESCAPE SLIDE



PASSENGER DOOR AND ESCAPE SLIDE

This Page Intentionally Left Blank

UGB13131 - U2AT4M0 - UM25PZ00000002

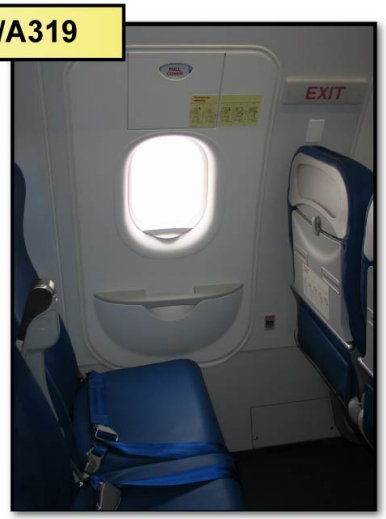
25 EQUIPMENT/FURNISHINGS PRESENTATION (1)

EMERGENCY EXITS

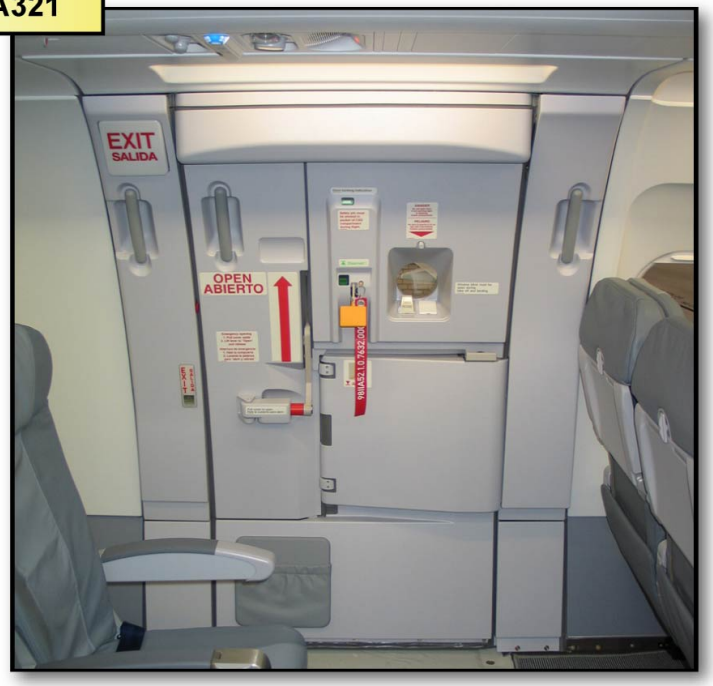
The A318 and A319 have two overwing emergency exits (one on each side).
The A320 (and the A319 as an option) has four overwing exits (two on each side).
The A321 has four emergency exits, two in front and two aft the wing.

A320
A319

A318/A319



A321



EMERGENCY EXITS

25 EQUIPMENT/FURNISHINGS PRESENTATION (1)

EMERGENCY EXIT ESCAPE SLIDE

A dual lane escape slide will deploy automatically with the opening of a left hand or right hand overwing exit.
If the automatic inflation fails, a red handle installed at each exit frame, when pulled, activates the manual inflation.

EMERGENCY EXIT ESCAPE SLIDE

25 EQUIPMENT/FURNISHINGS PRESENTATION (1)

PURSER STATION

The Flight Attendant Panel (FAP) used for control & programming
The FAP displays different pages related to the different systems connected to the Cabin Intercommunication Data System (CIDS).
The FAP is used for control and programming.
All handsets are identical; they can be used for passenger announcements and for interphone calls.

PURSER STATION

Flight Attendant Panel (FAP)

HANDSET

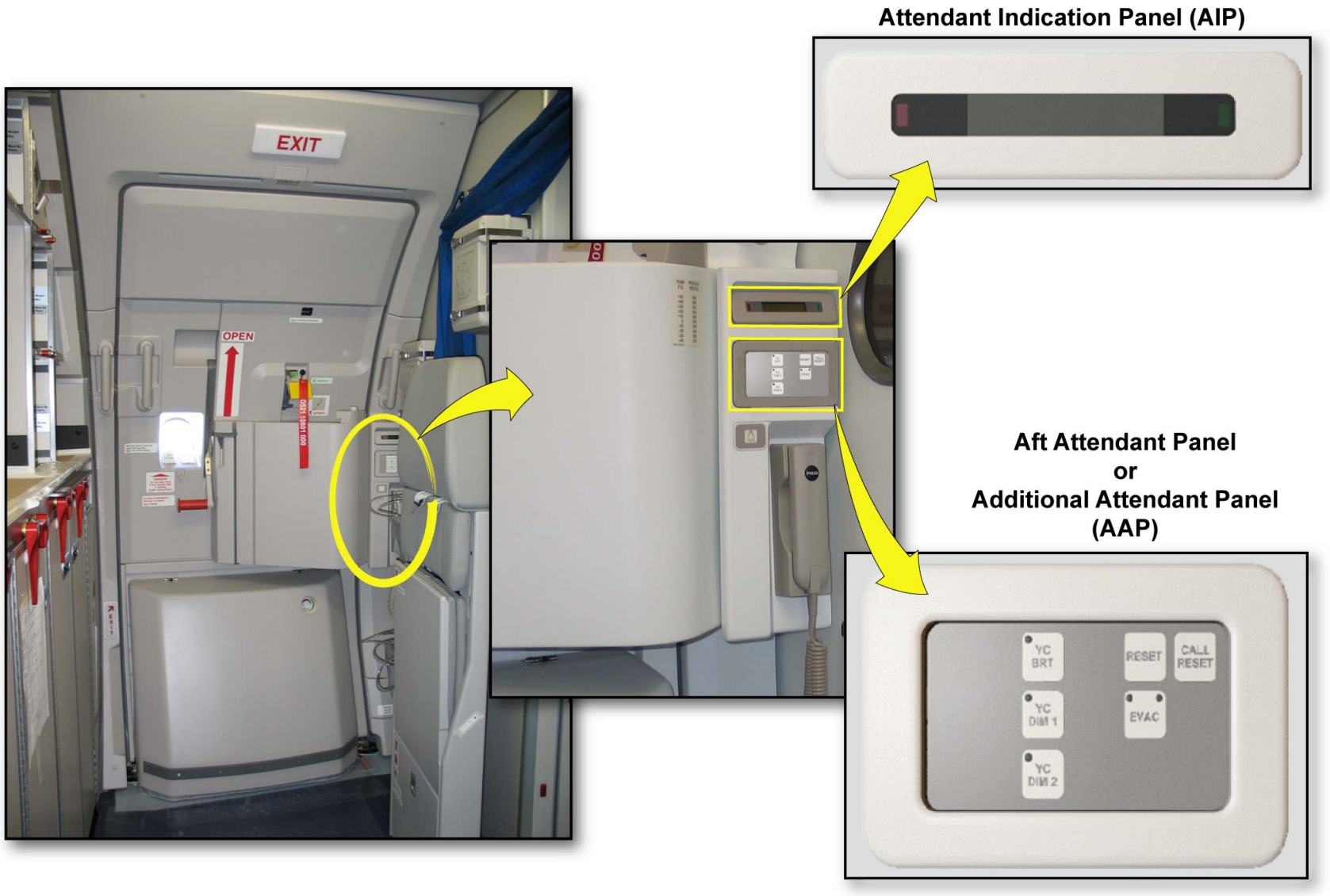
PURSER STATION

25 EQUIPMENT/FURNISHINGS PRESENTATION (1)

AFT CREW STATION

The Aft Attendant Panel also called Additional Attendant Panel (AAP) is installed at the rear left crew station. It controls some cabin systems. The AAPs have different number of buttons depending on different aircraft configurations.
The Attendant Indication Panel (AIP) is part of the communication system and is installed near each main cabin crew station. It displays communication and system related messages.

UGB13131 - U2AT4M0 - UM25PZ00000002

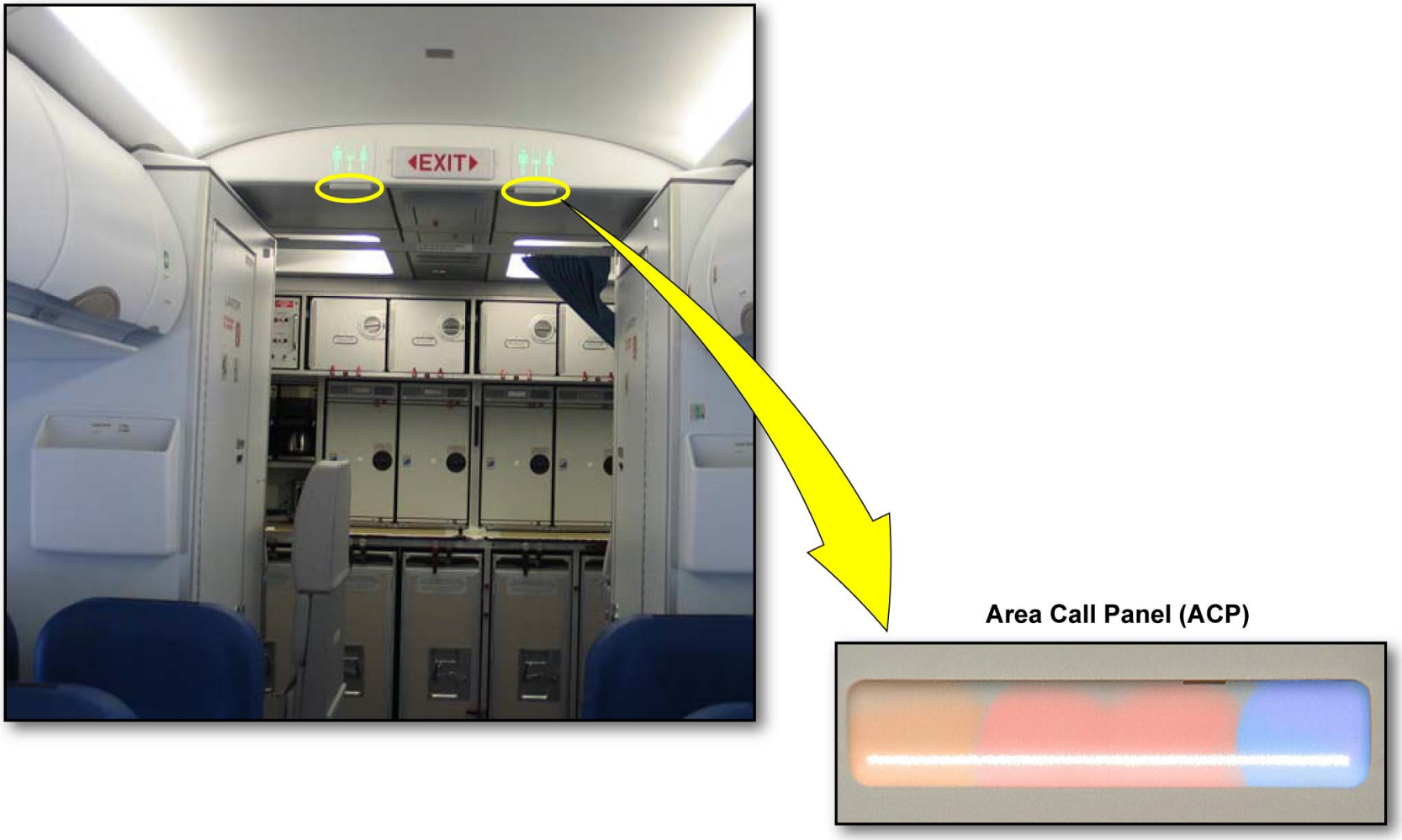


AFT CREW STATION

25 EQUIPMENT/FURNISHINGS PRESENTATION (1)

AREA CALL PANEL

The Area Call Panels (ACPs) are installed in the cabin ceiling of the passenger compartment and indicate:
- Crew communication (pink steady or flashing),
- Passenger call (blue steady),
- Lavatory call (amber steady),
- Lavatory smoke detection (amber flashing).



AREA CALL PANEL

25 EQUIPMENT/FURNISHINGS PRESENTATION (1)

LOWER DECK CARGO COMPARTMENT

The lower deck is divided into three cargo compartments:
- The FWD cargo compartment,
- The AFT cargo compartment,
- The bulk cargo compartment.

FWD AND AFT CARGO COMPARTMENT

The forward and aft cargo compartment is basically equipped to be loaded with bulk and loose baggage.

AFT CARGO COMPARTMENT BULK VERSION

LOWER DECK CARGO COMPARTMENT - FWD AND AFT CARGO COMPARTMENT

25 EQUIPMENT/FURNISHINGS PRESENTATION (1)

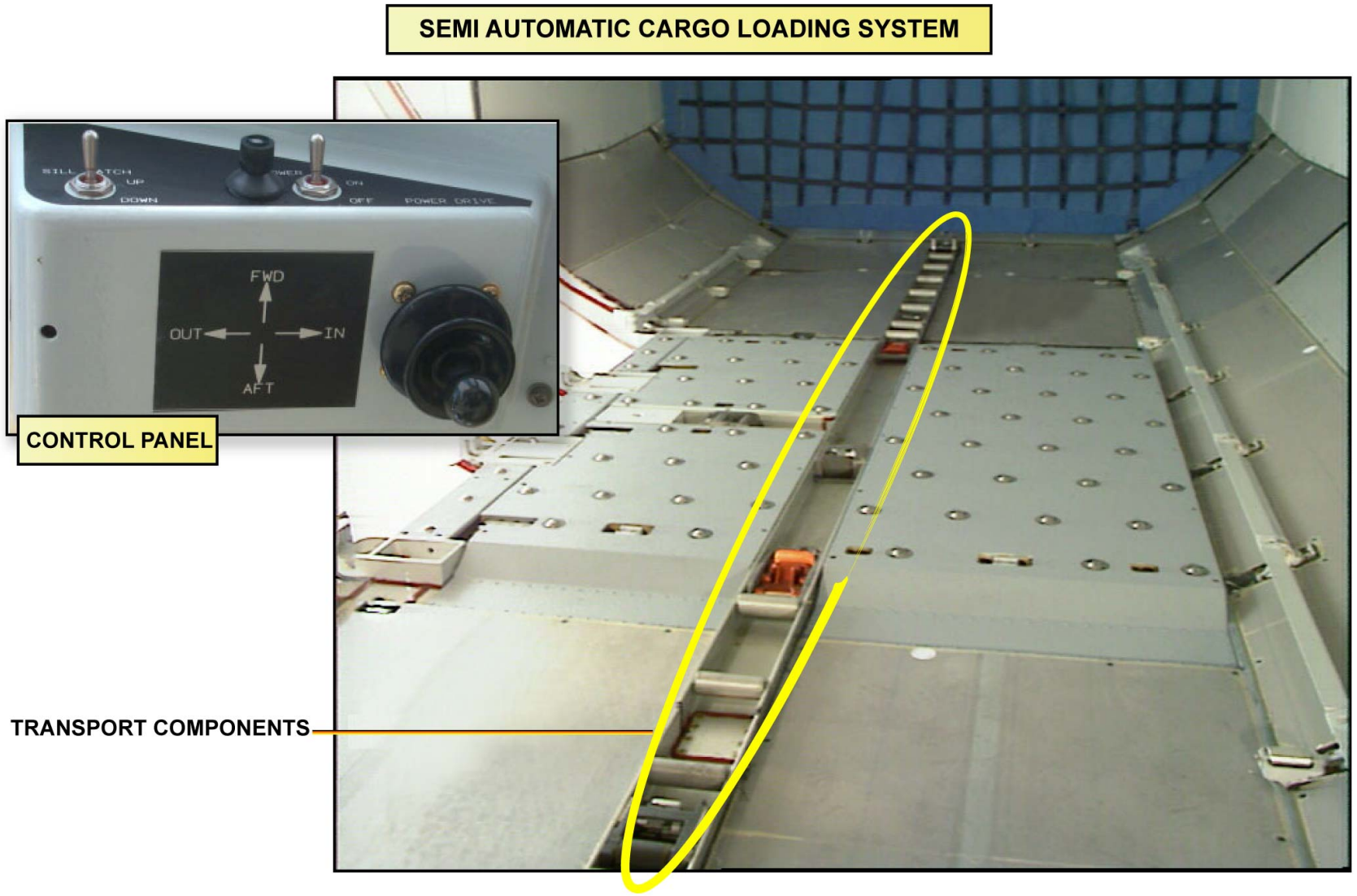
LOWER DECK CARGO COMPARTMENT (continued)

CARGO LOADING

The optional semi-automatic cargo loading system transports pallets and containers and is operated from a control panel installed on the cargo door.

BULK CARGO COMPARTMENT

The bulk cargo compartment can only be loaded with bulk and loose baggage.
A divider net with a screen separates the bulk cargo compartment from the AFT cargo compartment.



LOWER DECK CARGO COMPARTMENT - CARGO LOADING & BULK CARGO COMPARTMENT

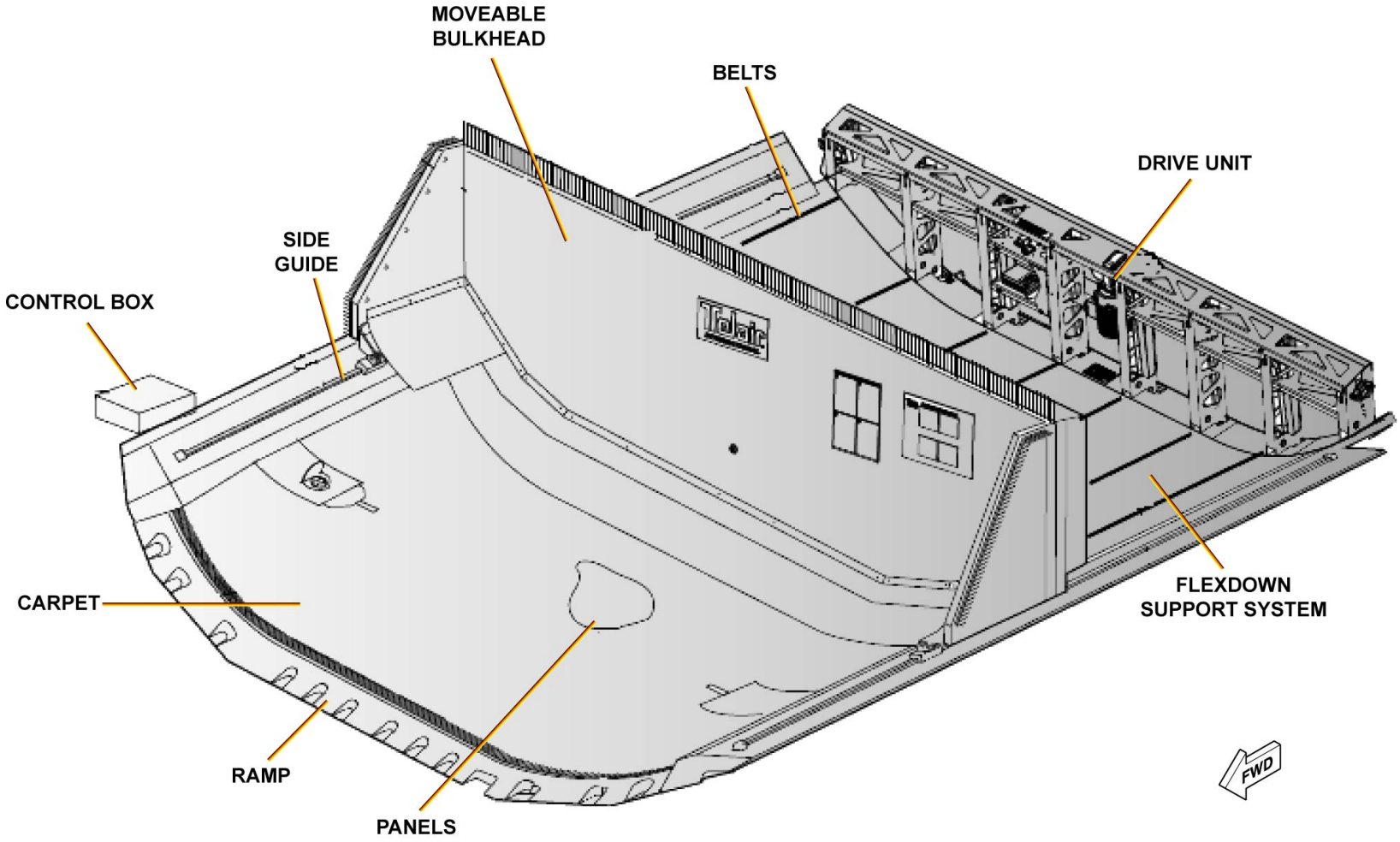
25 EQUIPMENT/FURNISHINGS PRESENTATION (1)

LOWER DECK CARGO COMPARTMENT (continued)

SLIDING CARPET LOADING SYSTEM

The optional Sliding Carpet Loading system (SLC) has a conveyor belt (carpet), on which the loading personnel puts the cargo.
The control box is installed in the ceiling of the cargo door area.

UGB13131 - U2AT4M0 - UM25PZ00000002



LOWER DECK CARGO COMPARTMENT - SLIDING CARPET LOADING SYSTEM

SLIDING CARPET CONTROL PANEL

SLIDING CARPET LOADING SYSTEM

LOWER DECK CARGO COMPARTMENT - SLIDING CARPET LOADING SYSTEM

This Page Intentionally Left Blank

UGB13131 - U2AT4M0 - UM25PZ00000002

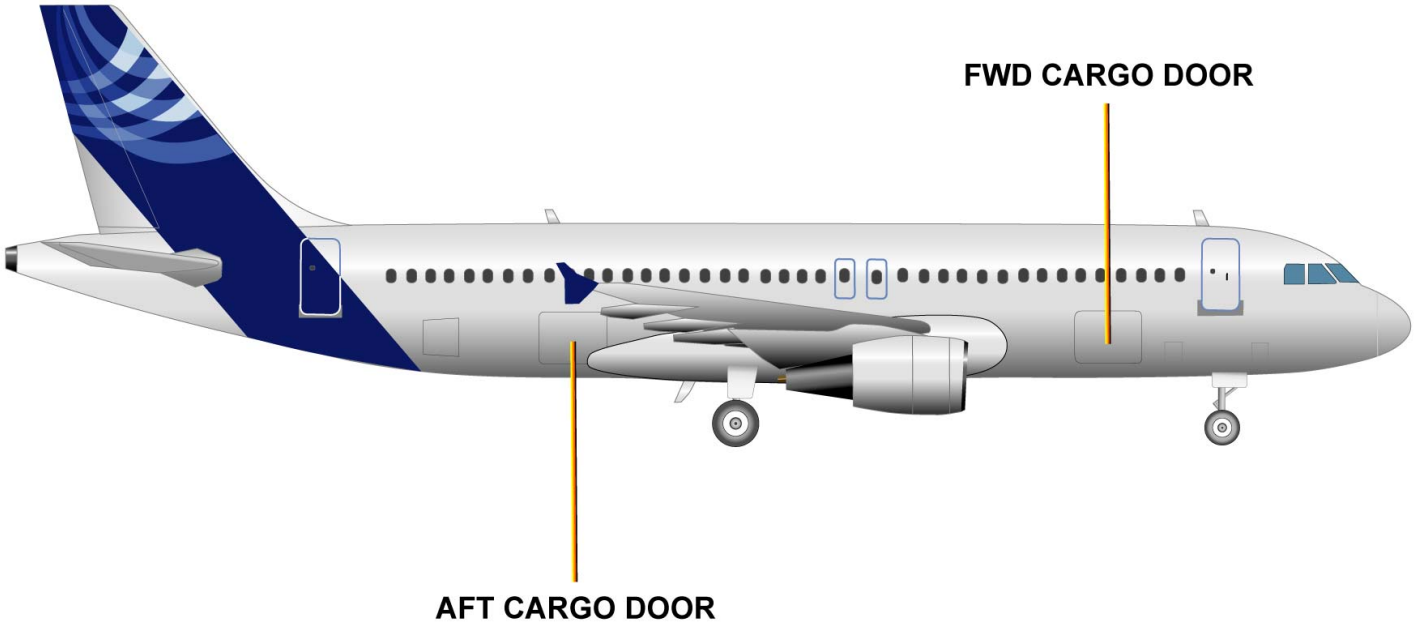
25 EQUIPMENT/FURNISHINGS PRESENTATION (1)

LOWER DECK CARGO COMPARTMENT (continued)

CARGO COMPARTMENT DOORS

Access to the FWD, aft cargo compartment is gained by two outwards opening doors.
The cargo doors are installed on the right hand side of the fuselage.
The FWD and aft cargo doors are operated upwards by two hydraulic actuators with pressure supplied by the yellow electric pump (normal operation) or by a hand pump (manual operation).

UGB13131 - U2AT4M0 - UM25PZ00000002



LOWER DECK CARGO COMPARTMENT - CARGO COMPARTMENT DOORS

25 EQUIPMENT/FURNISHINGS PRESENTATION (1)

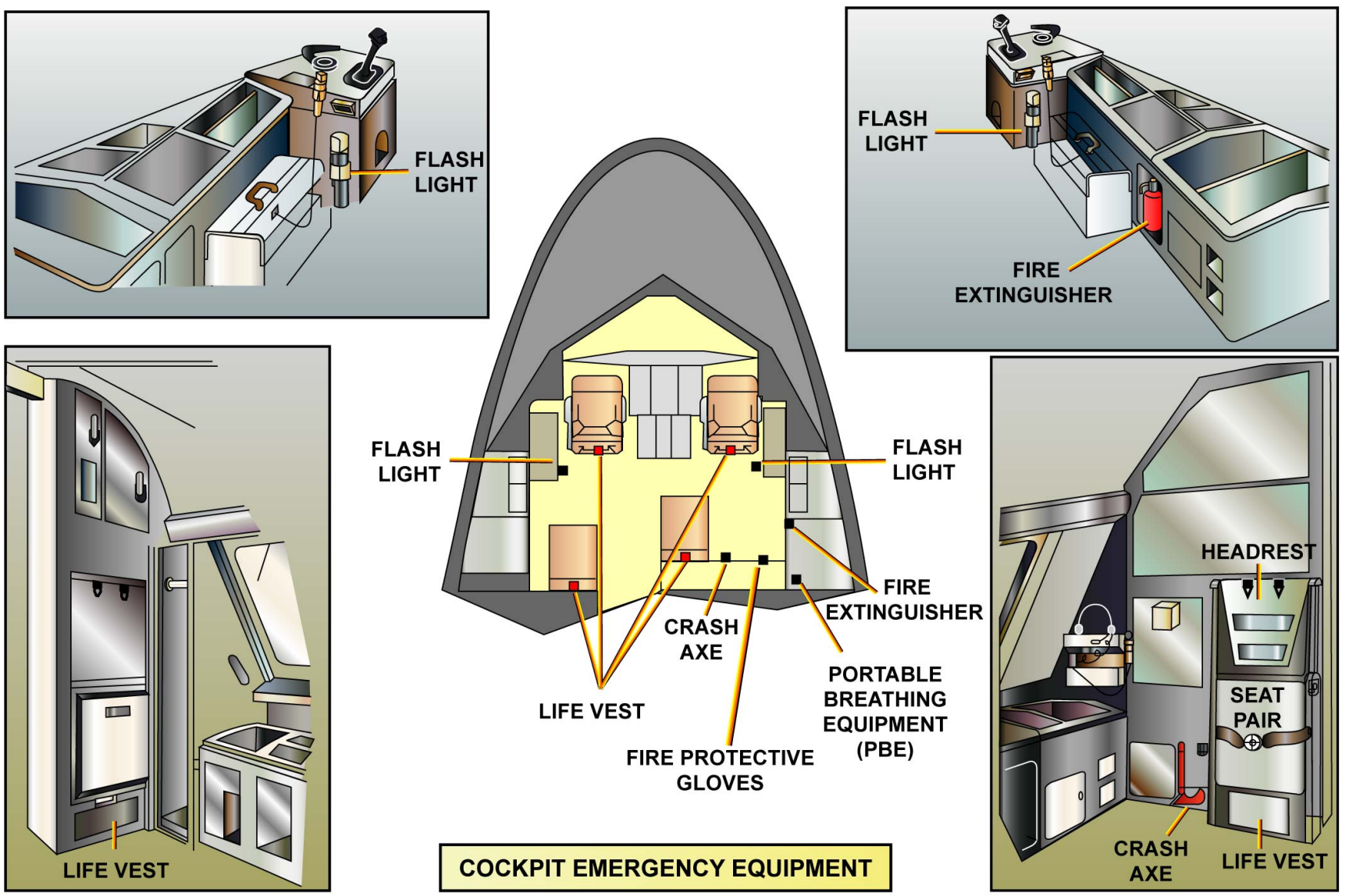
EMERGENCY EQUIPMENT

The function of emergency equipment is to give to crew and passengers efficient means to handle safely hazardous situations that could occur in the aircraft.

COCKPIT EMERGENCY EQUIPMENT LIST

The standard cockpit emergency equipment components are:
- Flash light,
- Portable Halon fire extinguisher,
- Life vest for flight crew,
- Protective Breathing Equipment (PBE),
- Crash axe,
- Fire proof gloves.

UGB13131 - U2AT4M0 - UM25PZ00000002



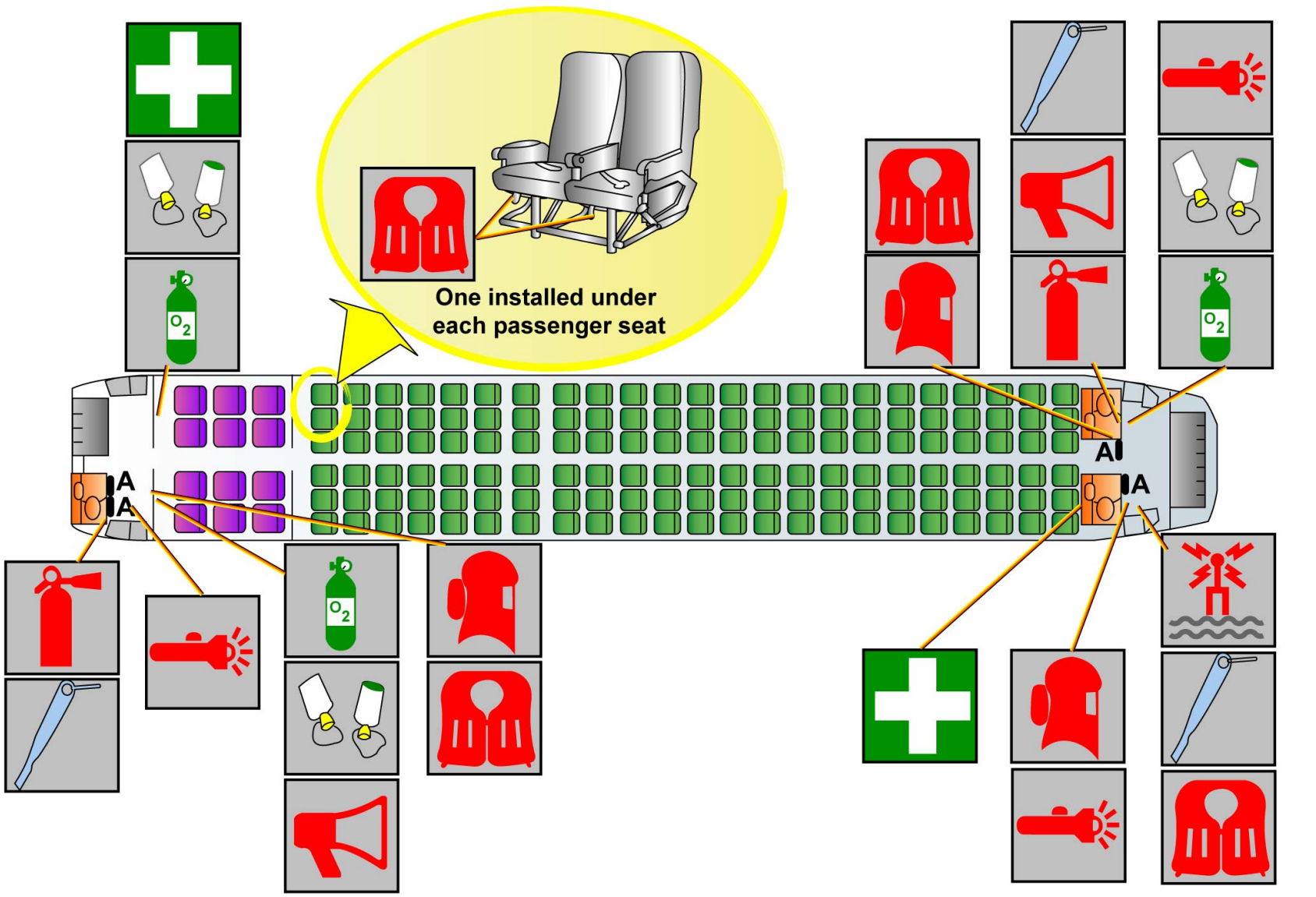
EMERGENCY EQUIPMENT - COCKPIT EMERGENCY EQUIPMENT LIST

25 EQUIPMENT/FURNISHINGS PRESENTATION (1)

EMERGENCY EQUIPMENT (continued)

CABIN EMERGENCY EQUIPMENT LIST

The standard cabin emergency equipment components are:
- Portable Halon extinguisher,
- Portable oxygen cylinder and portable oxygen mask,
- PBE,
- First aid kit,
- Megaphone,
- Portable ELT survival beacon,
- Flash light,
- Manual release tool,
- Demo kit,
- Life vest for infant,
- Spare life vest,
- Life vest for passenger (one stowed under each seat),
- Life vest for cabin crew (one stowed under each cabin attendant seat).

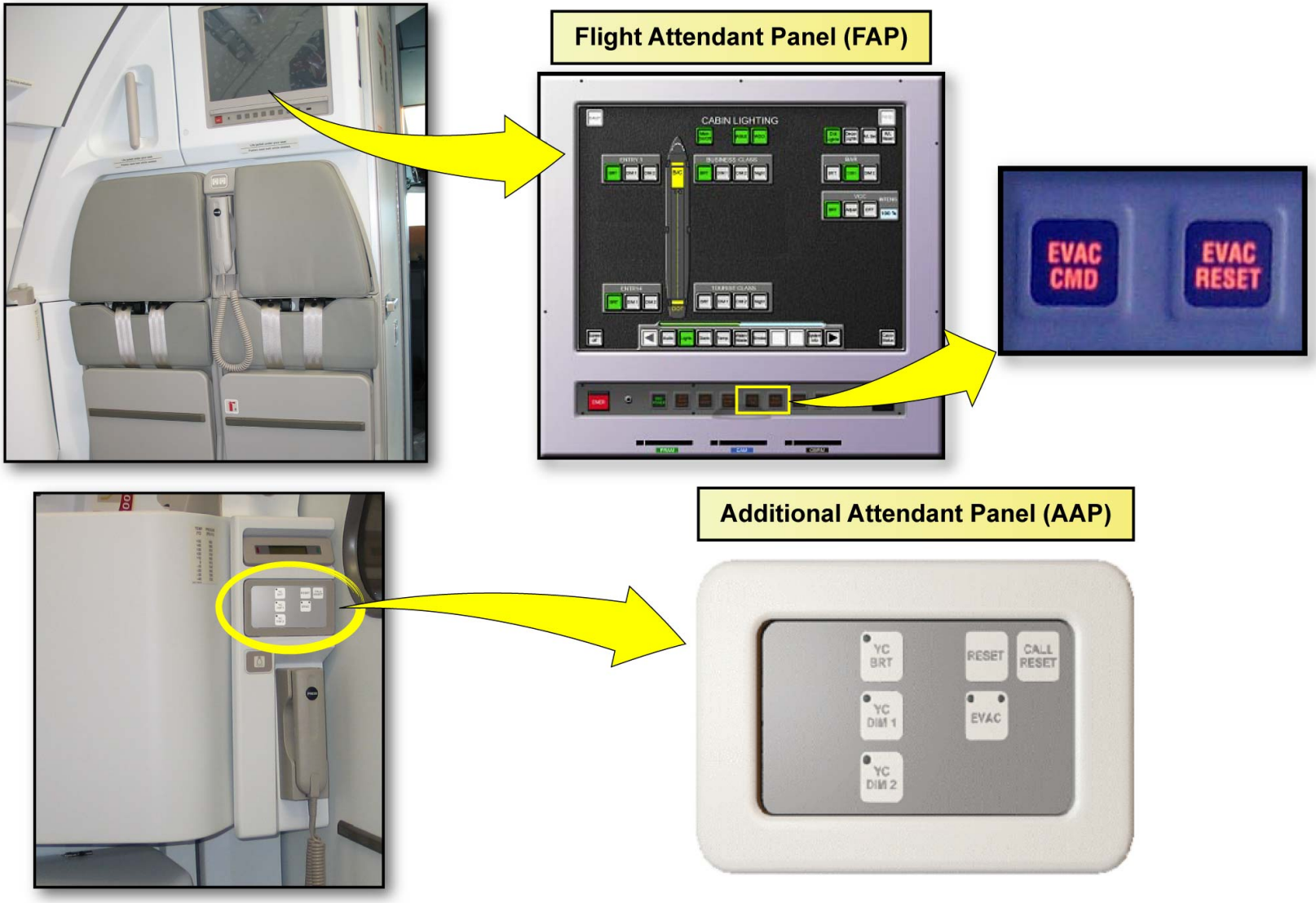


EMERGENCY EQUIPMENT - CABIN EMERGENCY EQUIPMENT LIST

25 EQUIPMENT/FURNISHINGS PRESENTATION (1)

EVACUATION COMMAND SYSTEM

The Emergency evacuation alert system may be activated either from the cockpit or the purser station.
On the sub panel of the FAP, two evacuation function hard keys are installed:
- EVAC CMD to start an emergency evacuation,
- EVAC RESET to reset the evacuation lights and audio alert.



EVACUATION COMMAND SYSTEM

25 EQUIPMENT/FURNISHINGS PRESENTATION (1)

COCKPIT EVACUATION PANEL

On the EVAC panel in the cockpit, a switch lets the evacuation command be activated from the purser station and the cockpit, or from the cockpit only.

COCKPIT EVACUATION PANEL

25 EQUIPMENT/FURNISHINGS PRESENTATION (1)

SAFETY PRECAUTIONS

When you do work on the aircraft, make sure that you obey all the AMM safety procedures. This will prevent injury to persons and/or damage to the aircraft. Here is an overview of the main safety precautions related to the Equipment/Furnishing system.
Use only the specified materials and obey the instructions from the manufacturers. Other materials can cause damage to the surface protection of components and related areas.
Use solvents/cleaning agents, sealant and other special materials only with a good flow of air through the work area. Do not smoke and do not breathe the gas. Those materials are poisonous, flammable and skin irritants. Put on protective clothing, rubber gloves, goggles and mask.
If you get one of these materials on your skin, in your mouth or in your eyes, flush it away with a flow of clean water. Get medical help if your skin or eyes become irritated.
Before you start to do work on the escape slide, make sure that the slide and door are safetied. This prevents sudden movement of the door and accidental deployment of the escape slide when you open the door.

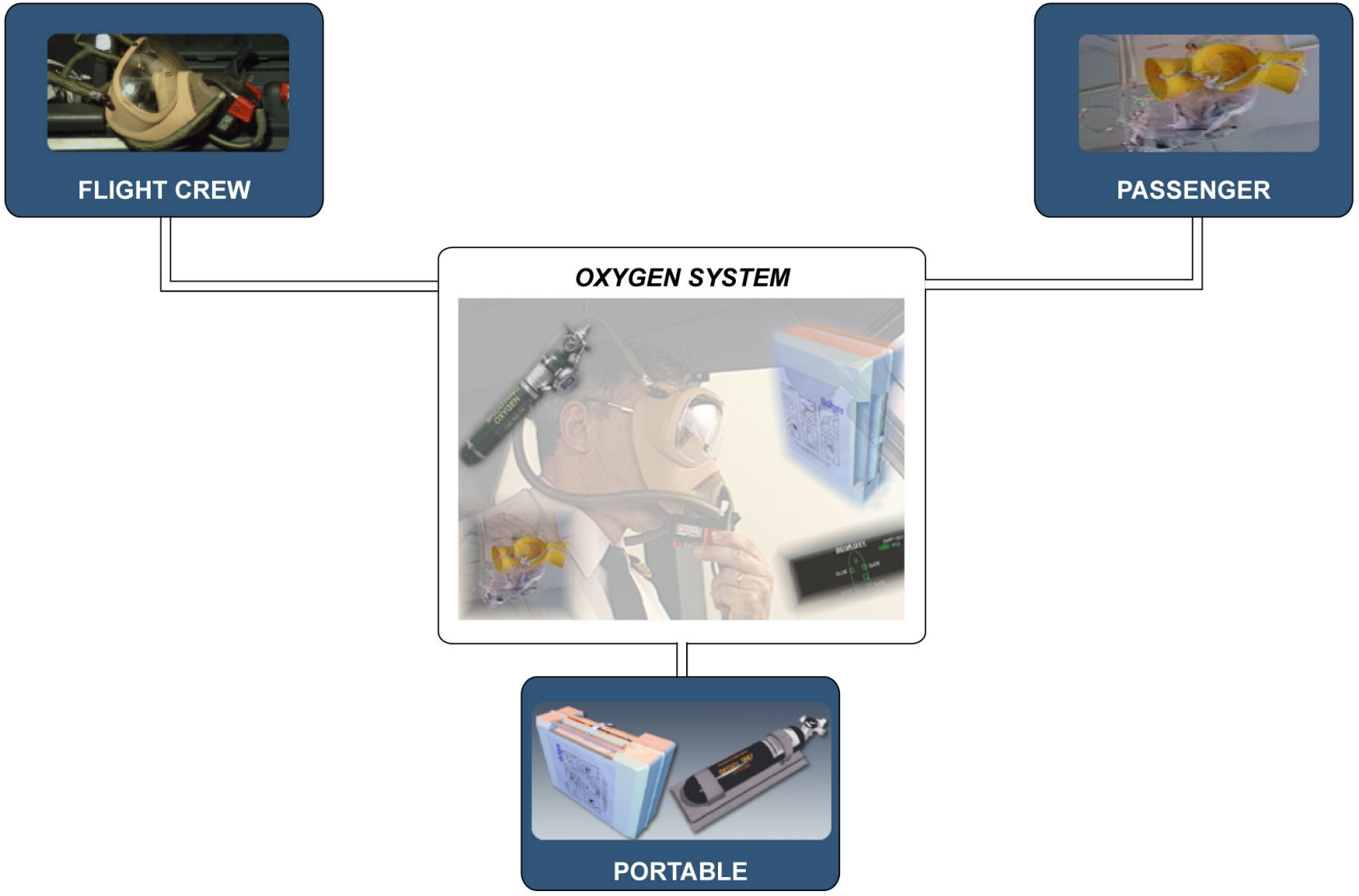
SAFETY PRECAUTIONS

35 OXYGEN PRESENTATION (1)

GENERAL

The oxygen system supplies crew and passengers with oxygen in case of cabin depressurization.
The oxygen system has three different subsystems:
- cockpit Crew Oxygen System: the oxygen is supplied from a high pressure oxygen cylinder to quick donning masks in the cockpit,
- passenger Oxygen System: the passenger and cabin attendant oxygen system is supplied by chemical oxygen generator units,
- portable Oxygen System: it has a high pressure portable cylinders with continuous flow type masks and smoke hoods.

UGB13131 - U2AT4M0 - UM35PZ000000001



GENERAL

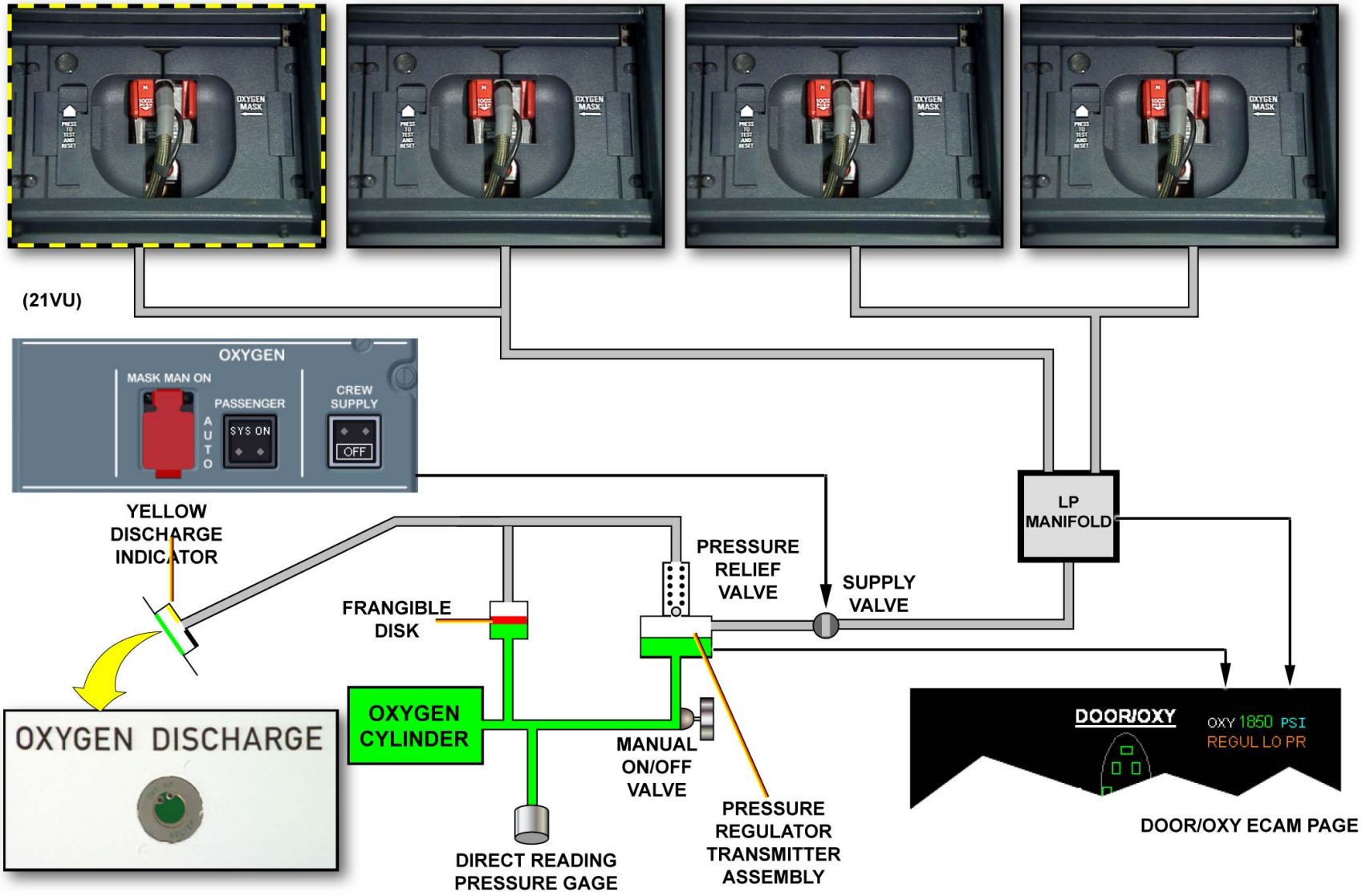
35 OXYGEN PRESENTATION (1)

COCKPIT CREW OXYGEN SYSTEM

The cockpit crew oxygen system supplies oxygen to the flight crew, in case of a sudden decrease in cabin pressurization or if there are smoke or dangerous gases in the cockpit.

CREW OXYGEN SUPPLY

The cockpit crew oxygen system has a high-pressure oxygen cylinder that can be isolated for maintenance by an ON/OFF valve. A pressure regulator reduces the high pressure to a supply low pressure to the masks via a supply valve.
The supply valve can be switched off from the cockpit for maintenance action as well as in ground configuration. The system is protected if an overpressure occurs in a high or low-pressure circuit. The overpressure is vented overboard. The oxygen pressure condition is indicated on the DOOR/OXY page of the ECAM system.



COCKPIT CREW OXYGEN SYSTEM - CREW OXYGEN SUPPLY

UGB13131 - U2AT4M0 - UM35PZ00000001

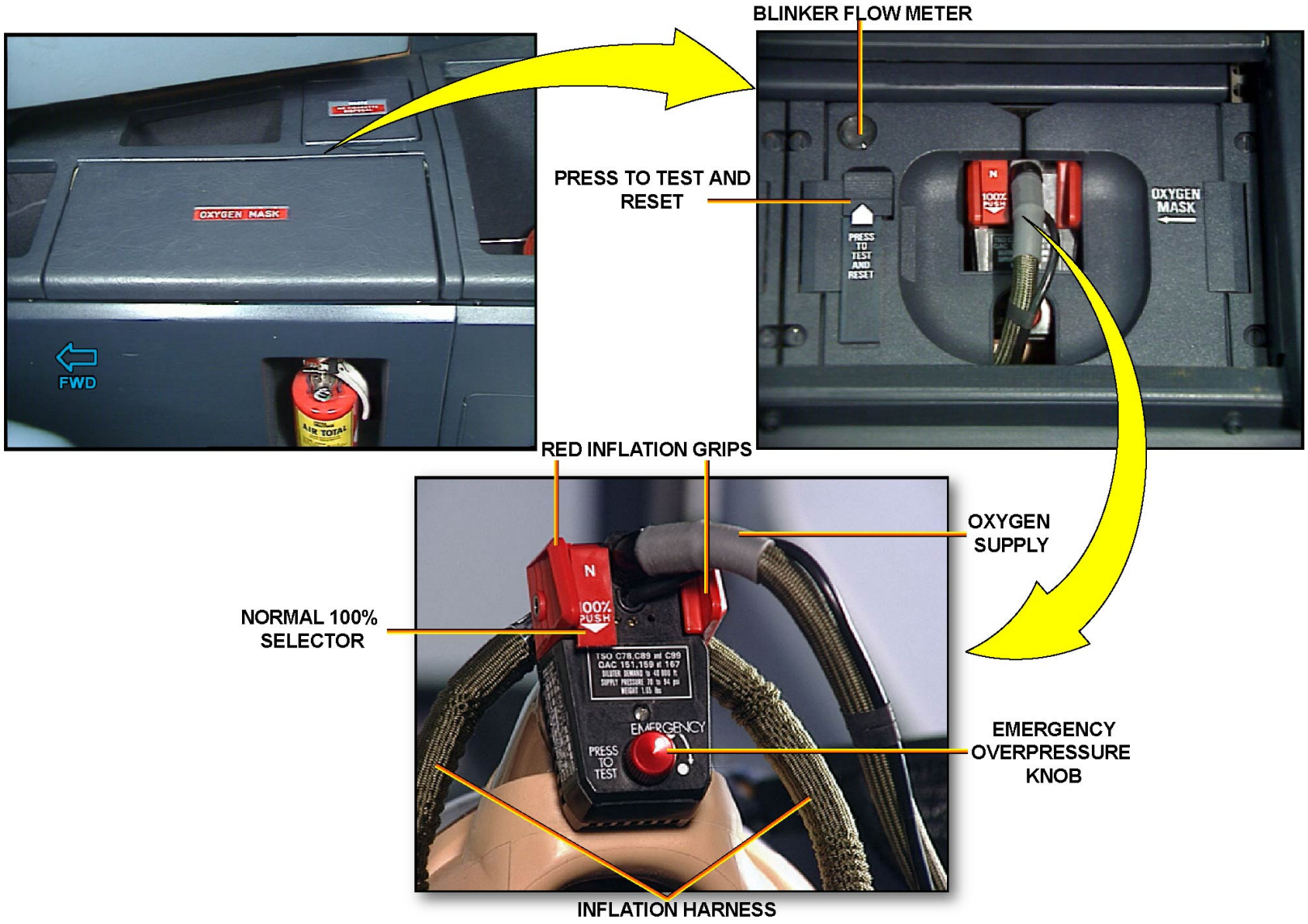
35 OXYGEN PRESENTATION (1)

COCKPIT CREW OXYGEN SYSTEM (continued)

CREW OXYGEN MASKS

To use the mask the crew member squeezes the red grips to pull the mask out of the box, and this action causes the mask harness to inflate to put the mask on. With the mask in position and the red grips released, the oxygen mask will be supplied with oxygen.
A mask-mounted regulator supplies a mixture of air and oxygen or pure oxygen, or gives emergency pressure control.
With the regulator set to NORMAL, the user breathes a mixture of cabin air and oxygen up to the cabin altitude at which the regulator supplies 100% oxygen.
The user can select 100%, in that case the regulator supplies pure oxygen at all cabin altitudes.
Depending on the situation, the user can use the emergency rotating knob and receive a maximum of oxygen or with the button pressed, the oxygen system can be tested.
A microphone is installed in the mask. A flow blinker flashes when there is an oxygen flow.
The TEST AND RESET control enables the oxygen flow to be tested as well as to reset the oxygen system.

UGB13131 - U2AT4M0 - UM35PZ000000001

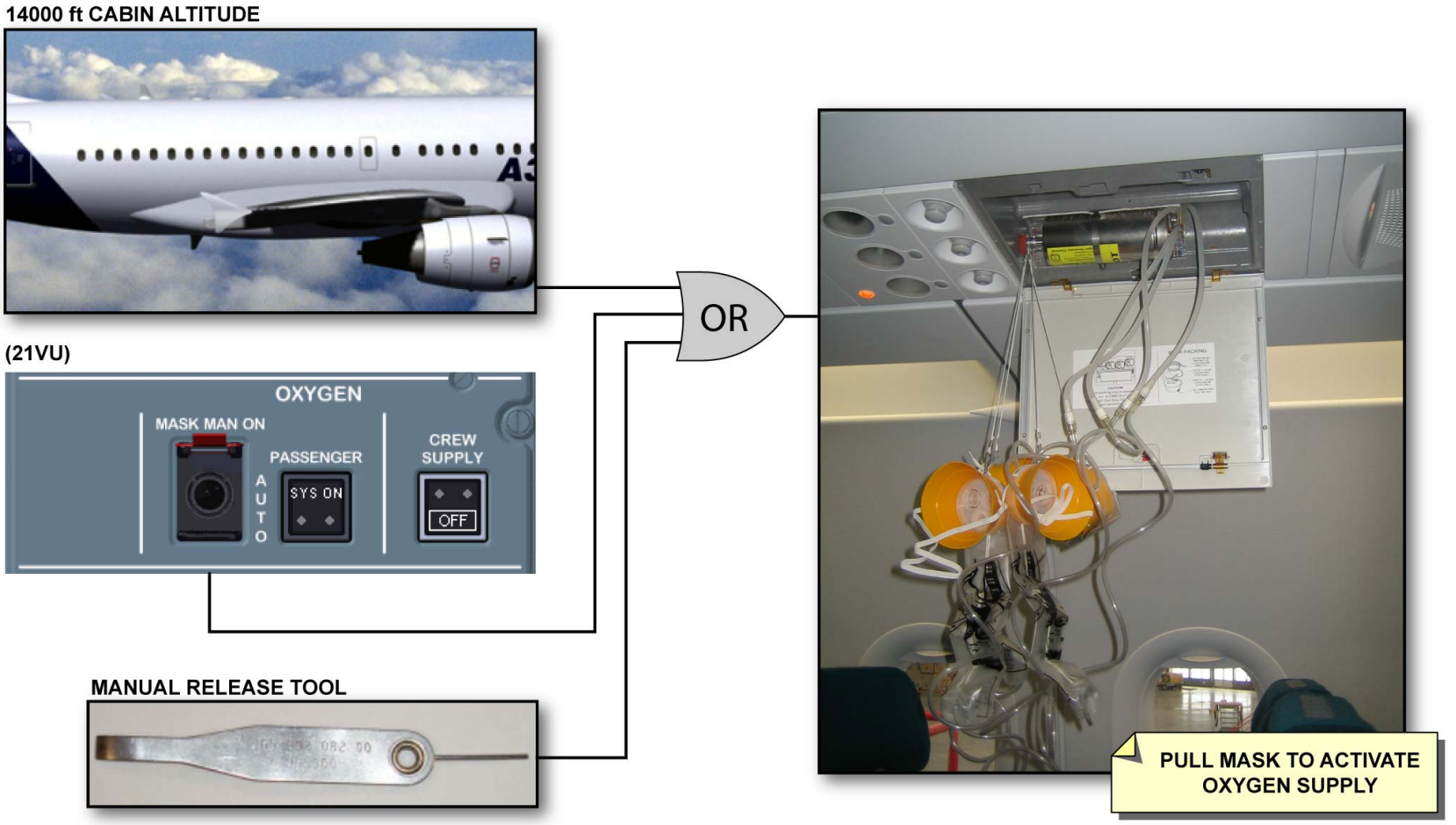


COCKPIT CREW OXYGEN SYSTEM - CREW OXYGEN MASKS

35 OXYGEN PRESENTATION (1)

CABIN OXYGEN SYSTEM

The fixed oxygen system in the cabin supplies oxygen to passengers and cabin crew in case of cabin depressurization.
It has containers with two to four masks and a chemical oxygen generator.
The oxygen containers contain the chemical oxygen generator and the masks.
In case of cabin depressurization the container doors open automatically and the oxygen masks drop out.
The container doors can also be opened from the cockpit or manually with a special tool placed in the cabin crew workstation.
By pulling the mask the oxygen generator is activated and produces pure oxygen to the masks for a limited time.

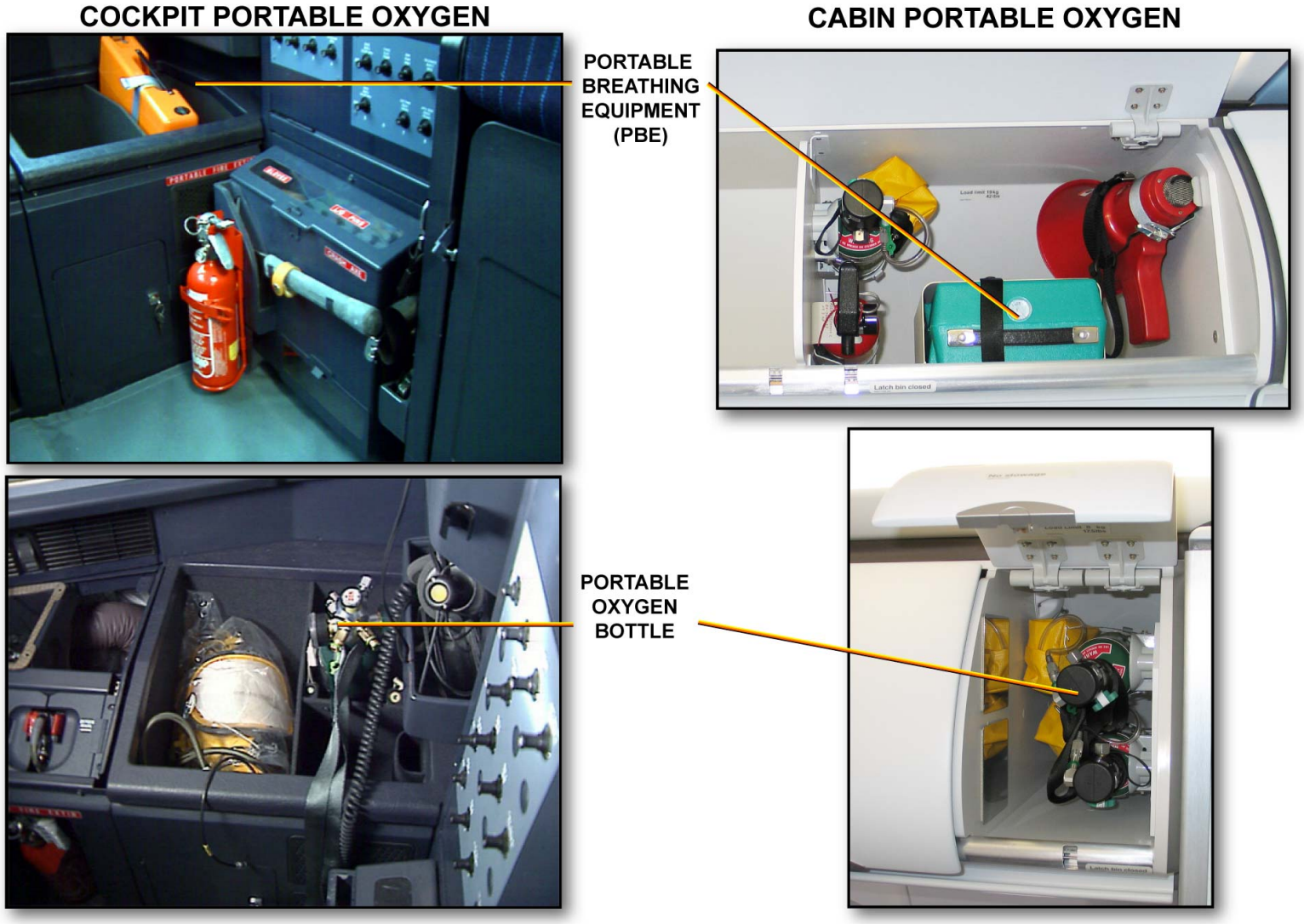


CABIN OXYGEN SYSTEM

35 OXYGEN PRESENTATION (1)

PORTABLE OXYGEN SYSTEM

A portable oxygen bottle and Portable Breathing Equipment (PBE) are installed in the cockpit.
Portable oxygen bottles and PBE are installed in the cabin.



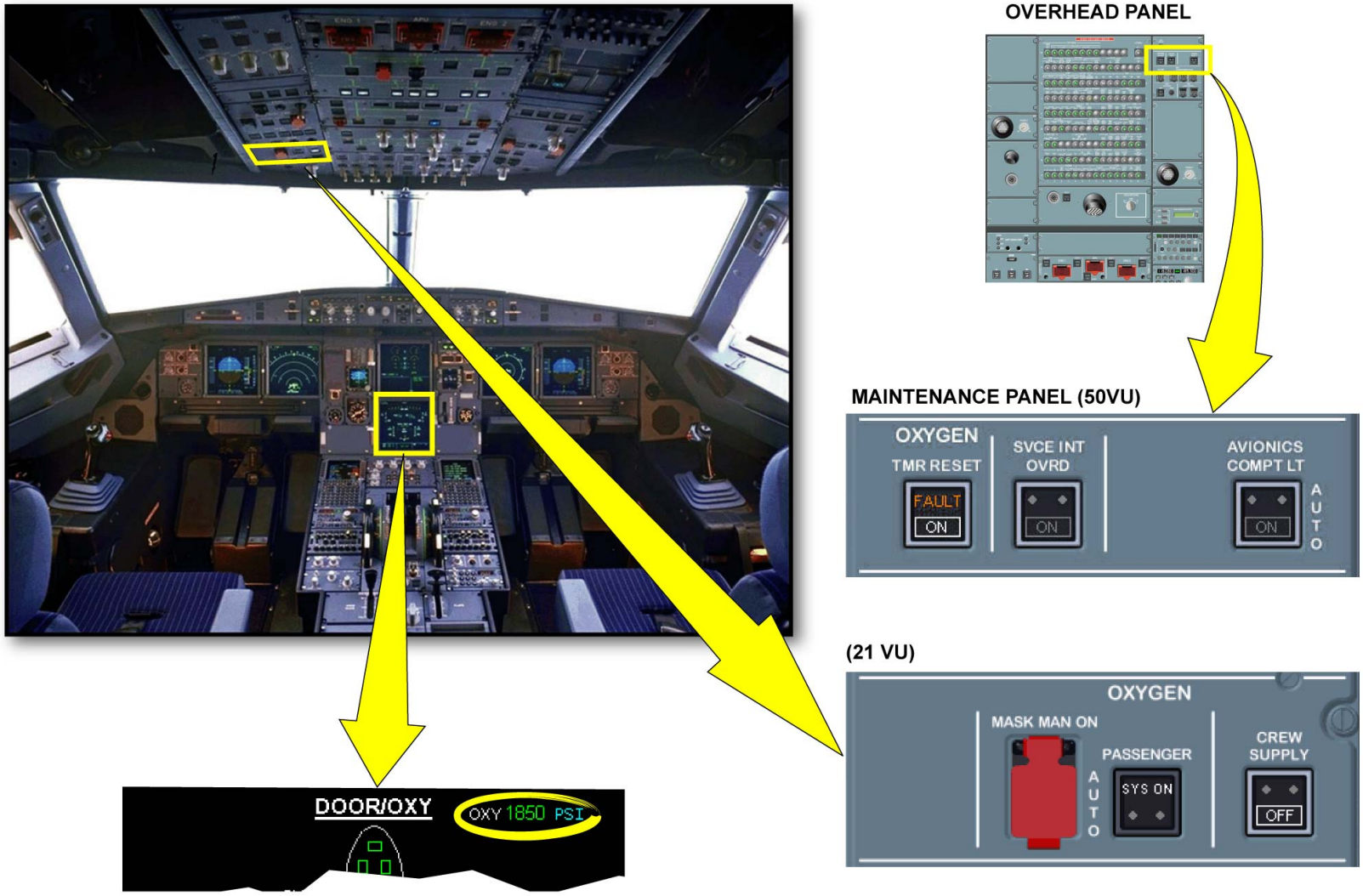
PORTABLE OXYGEN SYSTEM

35 OXYGEN PRESENTATION (1)

CONTROL AND INDICATING

The oxygen control panel, for crew and passengers, is part of the cockpit overhead panel.
The CREW SUPPLY P/B in OFF position shuts off the supply from the oxygen cylinder to the crew masks.
The MASK MAN ON P/B electrically controls the opening of the oxygen container doors. This will be indicated by the SYS ON light.
To reset the passenger oxygen system the TMR RESET P/B has to be pressed. The P/B also indicates a fault in the system.

UGB13131 - U2AT4M0 - UM35PZ00000001



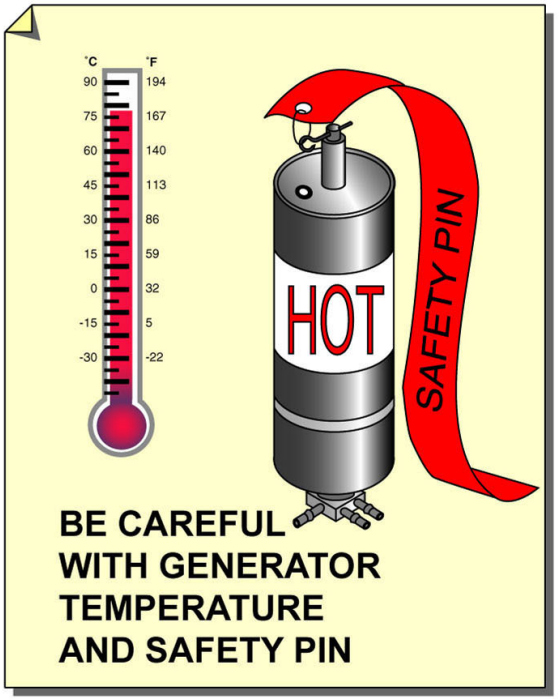
CONTROL AND INDICATING

35 OXYGEN PRESENTATION (1)

SAFETY PRECAUTIONS

When you work on the oxygen system, make sure that you obey all the Aircraft Maintenance Manual (AMM) safety procedures.
This will prevent injury to persons and/or damage to the aircraft. Here is an overview of main safety precautions relative to the oxygen system.
Clean the tools and make sure that your hands are clean (no grease) to prevent risk of contamination of the oxygen system. Be sure that any unwanted particles get into the oxygen system they can cause damage to the system.
Be carefully during removal / installation or transportation of the oxygen chemical generator. Do not pull the safety pin, which will activate the oxygen chemical generator (when activated the generator becomes very hot).

UGB13131 - U2AT4M0 - UM35PZ00000001



SAFETY PRECAUTIONS

38 WATER AND WASTE PRESENTATION (1)

SYSTEM INTRODUCTION

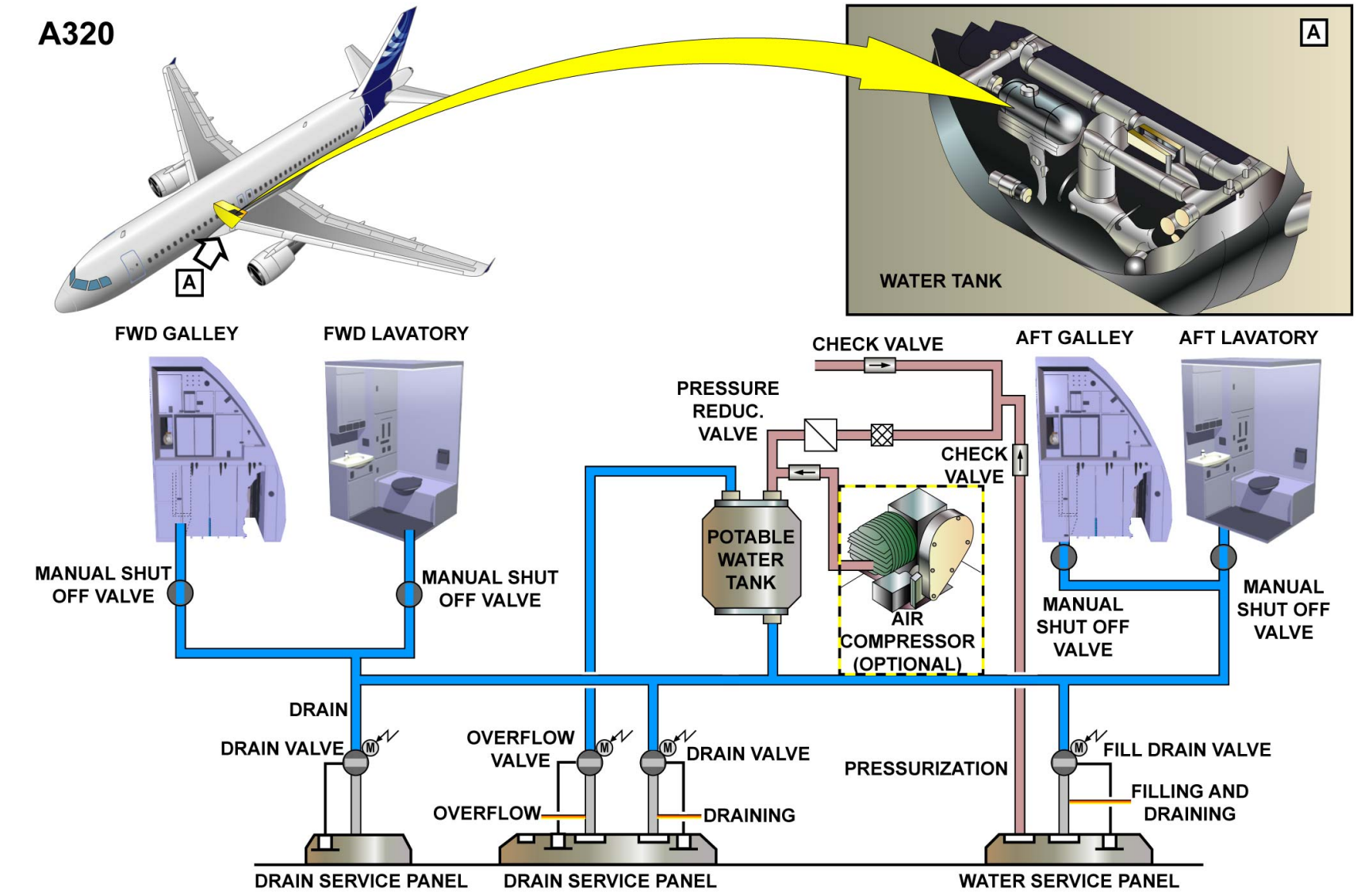
The water and waste system has:
- a potable water system,
- a waste water system,
- a toilet system.

POTABLE WATER SYSTEM

The potable water system supplies water from the water tank through a distribution system to the users.
The users are the water faucets in the galleys and lavatories and the vacuum toilet units.
A water heater is installed under the washbasin in each toilet unit to supply hot water to the water tap.
The potable water system is pressurized by the bleed air system.
A compressor (optional) can be installed to pressurize the water system with air on the ground.
Manual shut off valves are installed to isolate any galley or lavatory.

A320

The potable water system can be serviced with or without electrical power available.
The A320 has one water servicing panel and due to water tank position, two drain servicing panels.



SYSTEM INTRODUCTION & POTABLE WATER SYSTEM

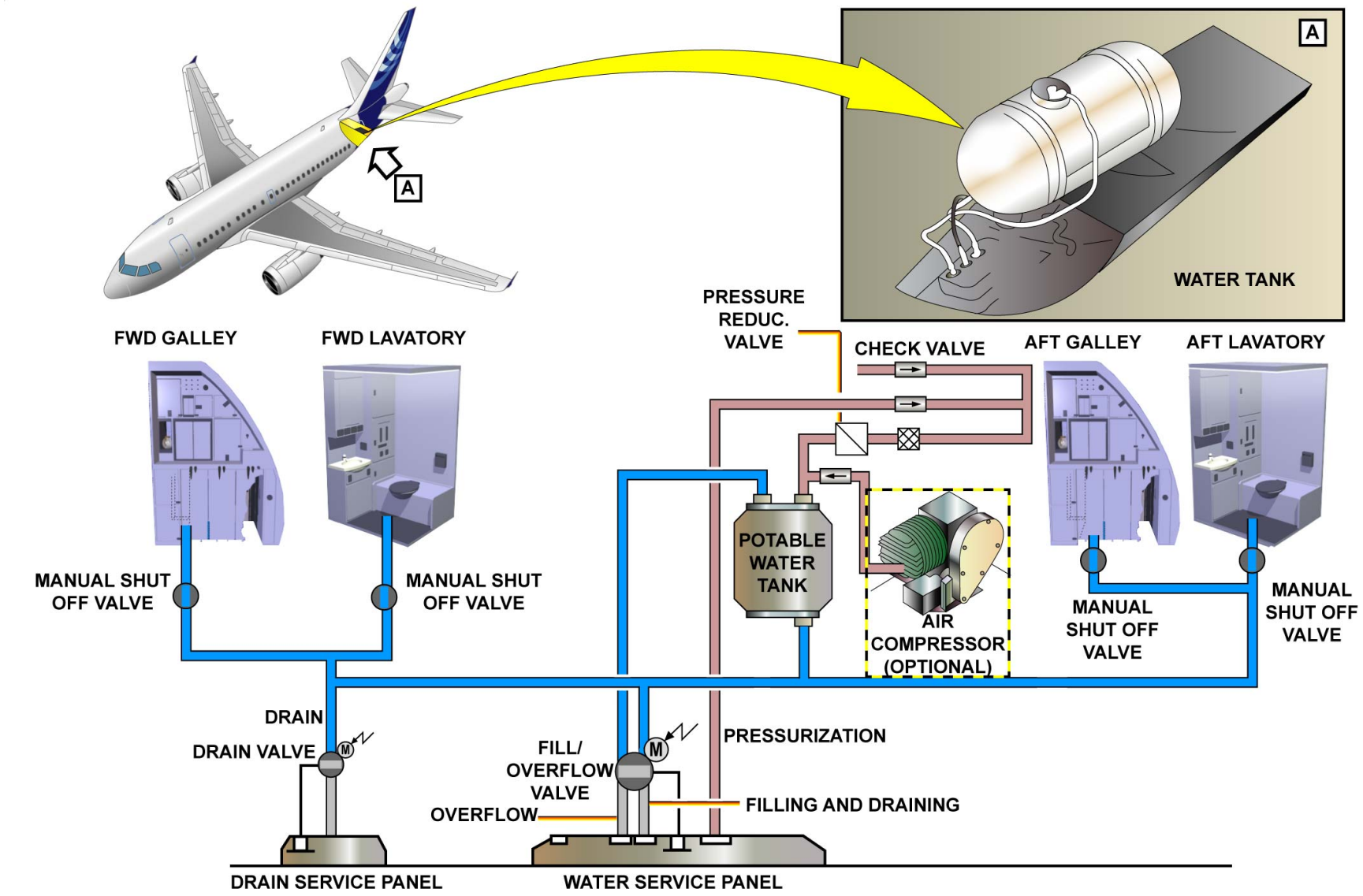
38 WATER AND WASTE PRESENTATION (1)

POTABLE WATER SYSTEM (continued)

A318/A319/A321

The A/C is serviced from a water servicing panel and a single drain servicing panel.

UGB13131 - U2AT4M0 - UM38PZ00000002



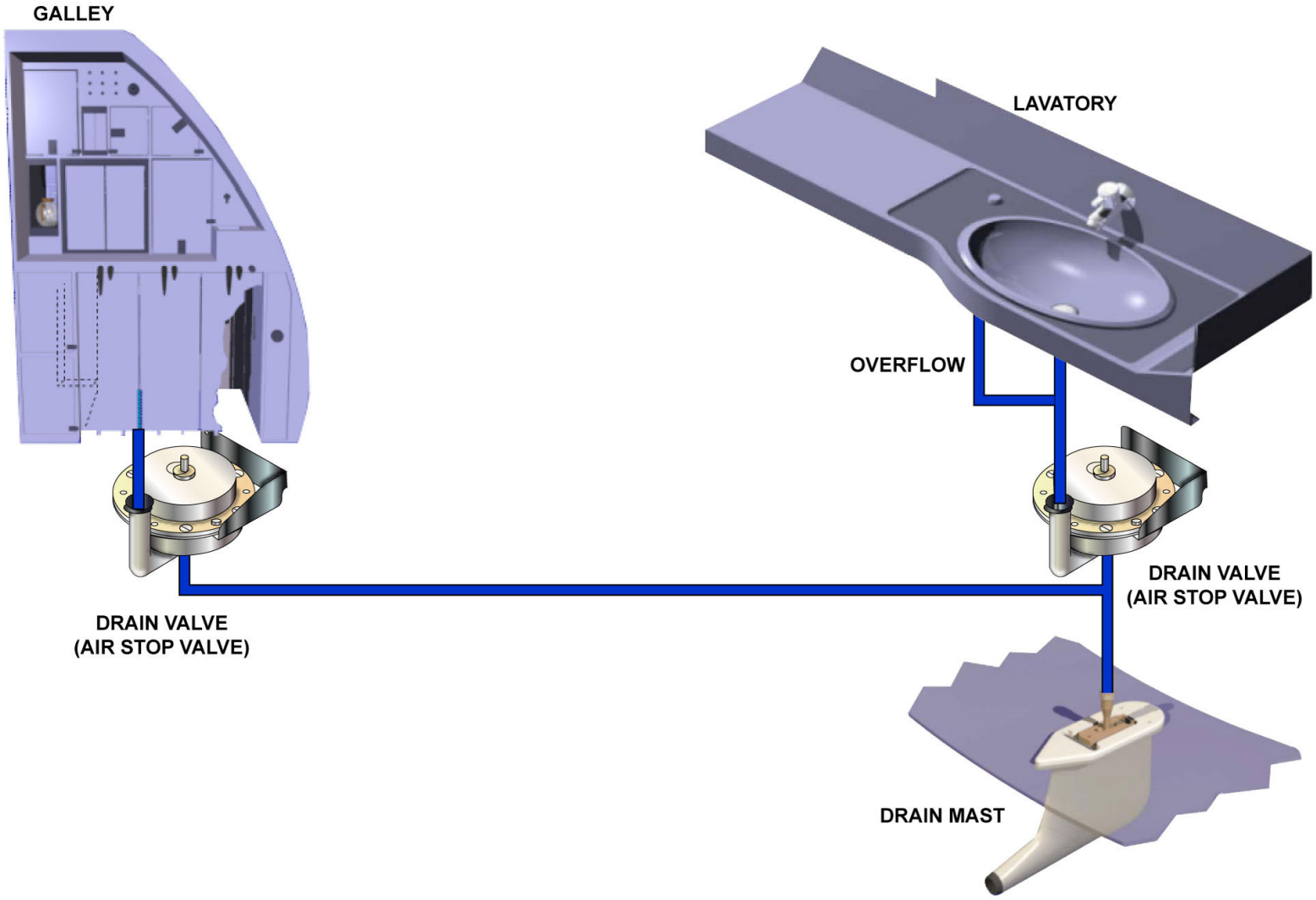
POTABLE WATER SYSTEM - A318/A319/A321

38 WATER AND WASTE PRESENTATION (1)

WASTE WATER SYSTEM

The waste water drain system collects the waste water from the lavatory washbasins and the galley sinks.
The waste water is discarded outside through the drain valve (air stop valve) and the heated drain mast.
Air stop valves avoid constant cabin depressurization by opening only when a certain amount of water is collected.

UGB13131 - U2AT4M0 - UM38PZ00000002



WASTE WATER SYSTEM

38 WATER AND WASTE PRESENTATION (1)

VACUUM TOILET SYSTEM

During toilet flushing, the waste from the toilet bowl is sent under the effect of cabin differential pressure to the under floor waste holding tank.
Waste holding tank servicing is done from the toilet servicing panel.
On ground and in flight below 16,000 ft, a vacuum generator is used to generate the necessary delta pressure.
The overall toilet system operation, monitoring and fault indication are controlled by the Vacuum System Controller Function (VSCF) integrated in the Cabin Intercommunication Data System (CIDS).

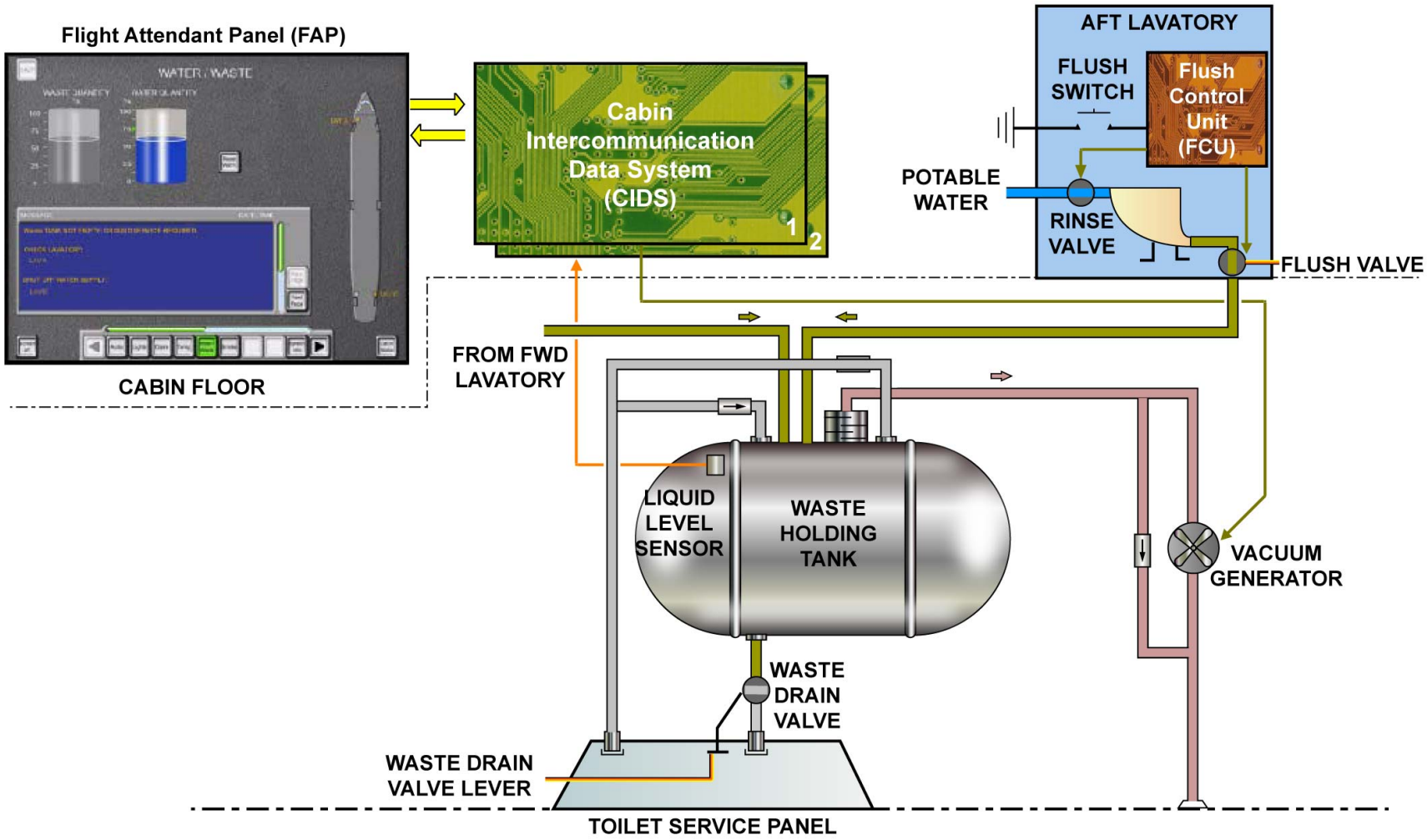
FLUSHING

When the flush switch is pressed, the Flush Control Unit (FCU) starts the flush sequence.
The rinse valve and the flush valve open in sequence, controlled by the FCU, to evacuate the waste material.
At the same time the FCU sends a signal to the VSCF, which will operate the vacuum generator.
The vacuum generator creates the necessary differential pressure between the cabin and the waste holding tank to move the waste from the toilet bowl.
Above 16,000 ft, the vacuum generator will not be started by the VSCF as the differential pressure is sufficient.

CONTROL AND MONITORING

The VSCF integrated in CIDS, controls and monitors the vacuum toilet system.
It is connected to the Centralized Fault Display System (CFDS).

UGB13131 - U2AT4M0 - UM38PZ00000002



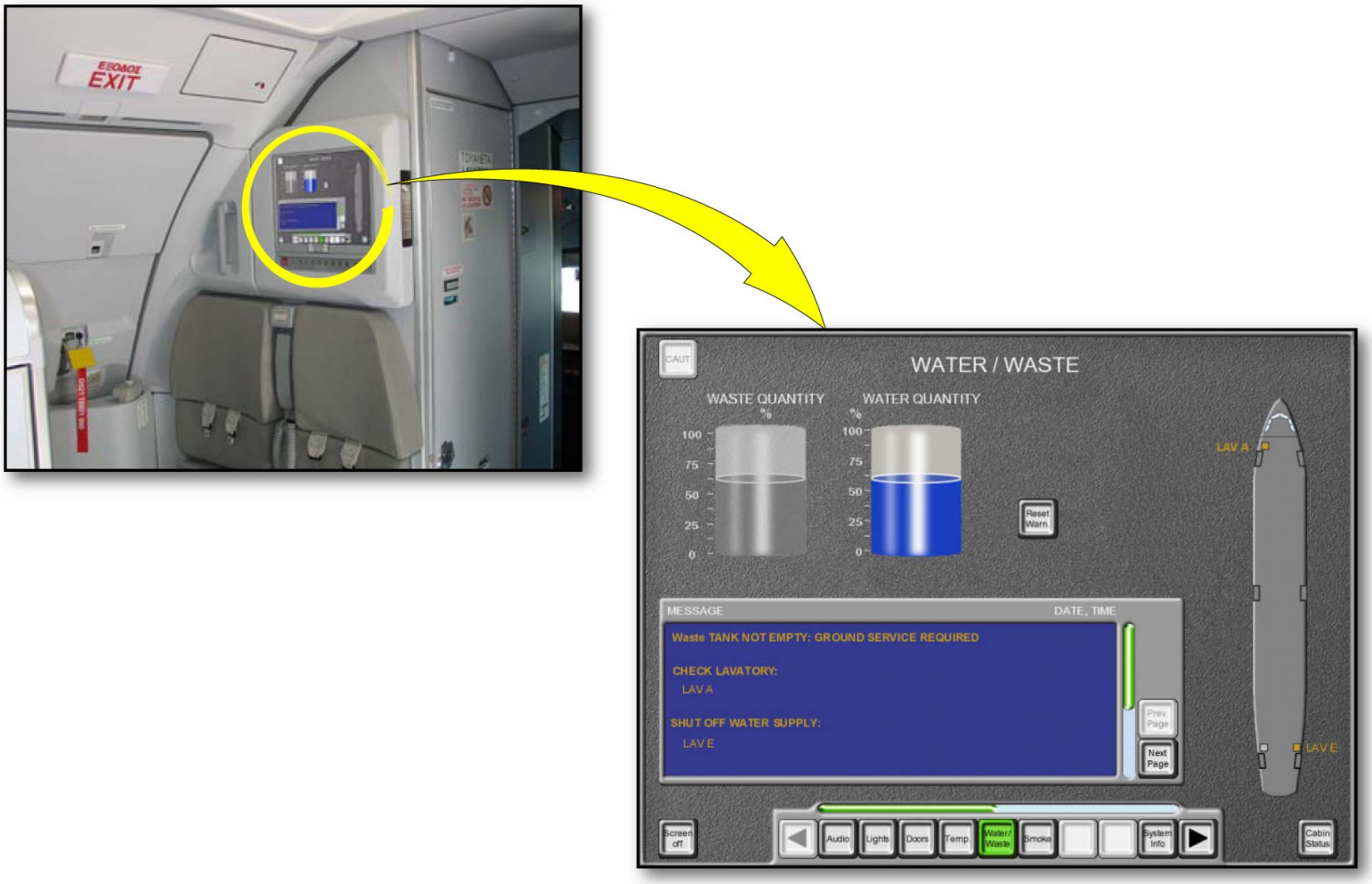
VACUUM TOILET SYSTEM - FLUSHING & CONTROL AND MONITORING

38 WATER AND WASTE PRESENTATION (1)

CONTROL AND INDICATING

The water and waste indications are displayed on the Flight Attendant Panel (FAP).

UGB13131 - U2AT4M0 - UM38PZ00000002



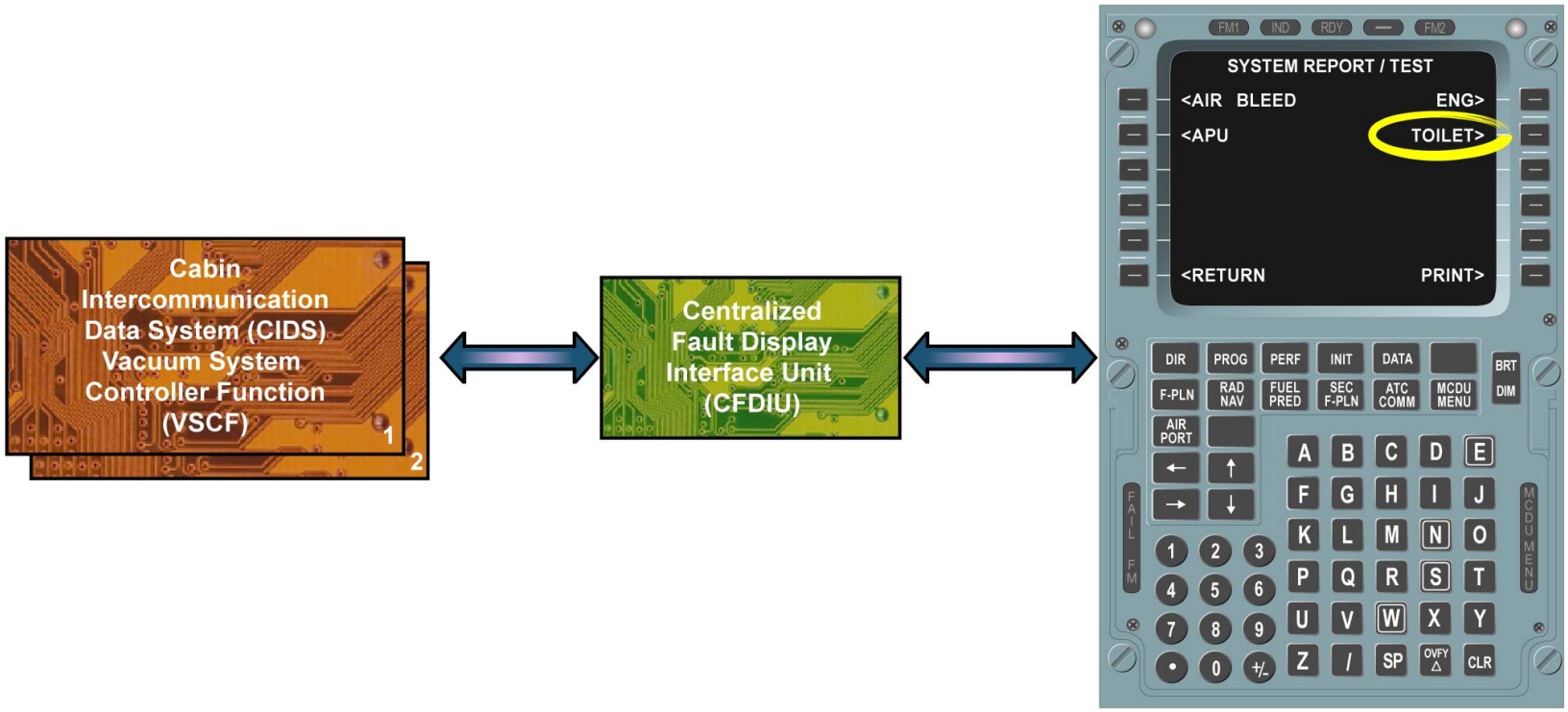
FLIGHT ATTENDANT PANEL WATER/WASTE PAGE

CONTROL AND INDICATING

38 WATER AND WASTE PRESENTATION (1)

MAINTENANCE/TEST FACILITIES

Each FCU monitors the operation of a toilet and transmits any fault to the VSCF.
The VSCF sends the failure data, concerning the vacuum toilet system to the CFDS.
The CFDS fault messages of the toilet system are accessible by using the MCDU.



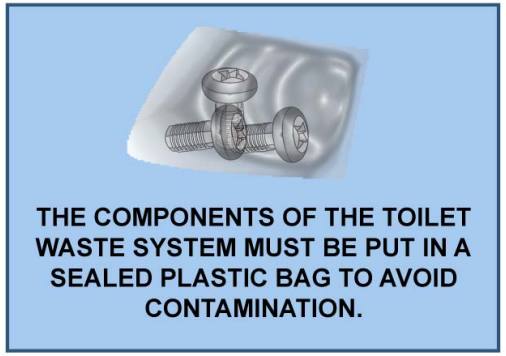
MAINTENANCE/TEST FACILITIES

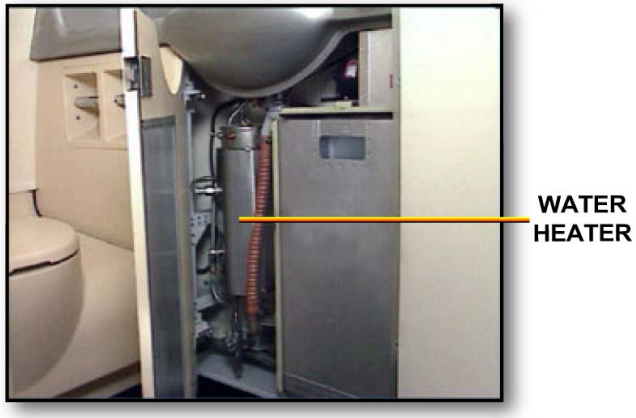
38 WATER AND WASTE PRESENTATION (1)

SAFETY PRECAUTIONS

When you work on aircraft, make sure that you obey all the Aircraft Maintenance Manual (AMM) safety procedures.
This will prevent injury to persons and/or damage to the aircraft. Here is an overview of main safety precautions relative to the water and waste system.
Before you start a task make sure that the warning notices are in position.
When you complete the work procedure, clean your hands with soap and water. This will prevent infection (toilet waste is dangerous for health).
Do not work on the waste system and the portable water system at the same time. This will prevent contamination of the potable water system.
When you remove a component of the toilet waste system, always put it in a plastic bag, then seal the bag.
Do not put documents into the plastic bag. Seal the bag first, then attach the document to it.
When you work on the potable water system make sure that the equipment you use for the procedure is clean and approved for this system. If not it can cause contamination.
Do not touch the water heater until it is sufficiently cool to prevent burns when you do the maintenance tasks.

UGB13131 - U2AT4M0 - UM38PZ00000002





SAFETY PRECAUTIONS

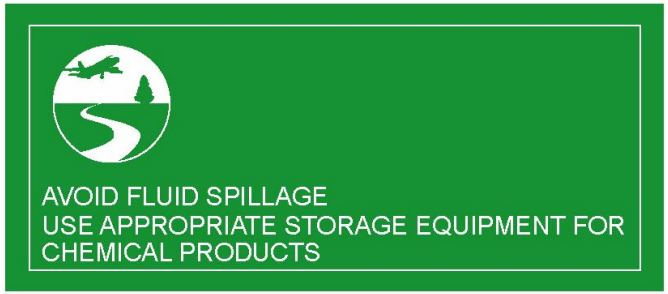
38 WATER AND WASTE PRESENTATION (1)

ENVIRONMENTAL PRECAUTIONS

Do not discharge products such as oil, fuel, solvent, lubricant either in trash bins, soil or into the water network (drains, gutters, rain water, waste water, etc...).
Sort waste fluids and use specific waste disposal containers.
Each product must be stored in an appropriate and specific cabinet or room such as a fire-resistant and sealed cupboard.

STORE PRODUCTS IN APPROPRIATE CONTAINER/CUPBOARD/ROOM

SORT WASTE FLUIDS IN CONTAINERS



FLUID SPILL CLEANUP KIT

USE SPECIFIC WASTE DISPOSAL CONTAINERS

ENVIRONMENTAL PRECAUTIONS

AIRBUS S.A.S.
31707 BLAGNAC cedex, FRANCE
STM
REFERENCE UGB13131
APRIL 2013
PRINTED IN FRANCE
AIRBUS S.A.S. 2013
ALL RIGHTS RESERVED

AN EADS COMPANY